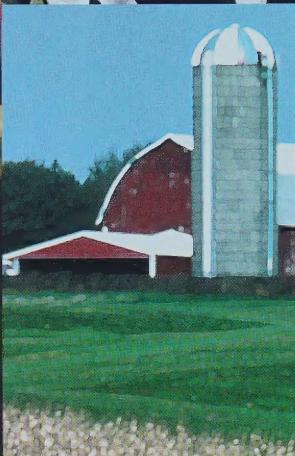
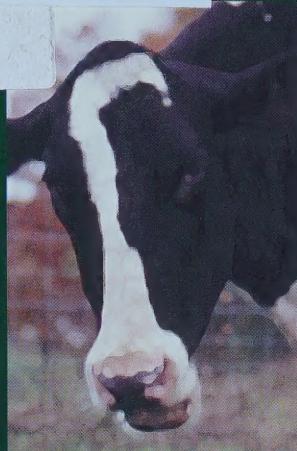


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1998 Annual Report

Michigan Agricultural Experiment Station

Michigan State University

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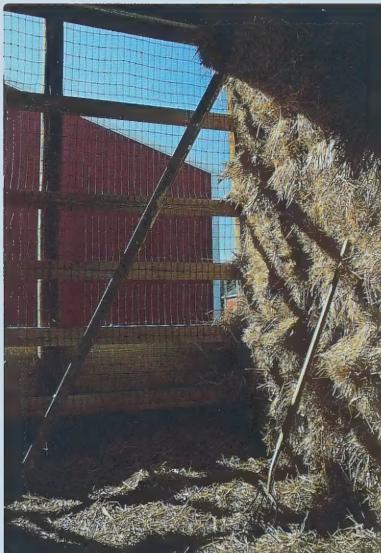
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# 1998

## *Annual Report*



### **Michigan Agricultural Experiment Station**

109 Agriculture Hall  
Michigan State University  
East Lansing, MI 48824-1039  
517-355-0123  
[maesdir@pilot.msu.edu](mailto:maesdir@pilot.msu.edu)  
<http://www.maes.msu.edu>

Report prepared under the direction of J. Ian Gray, director of the Michigan Agricultural Experiment Station, and Debbie McCaffrey, administrative assistant.

Design by Christine Altese; editing and production by Jamie DePolo, MAES information officer, Outreach Communications.

All illustrative photographs by Kurt Stepnitz, MSU photographer, except as noted.

Dairy cow photograph on cover by Bruce Fox.

All chairperson photographs by Harley Seeley, MSU photographer.

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# 1998

## *Research that enhances the state's economy, environment and quality of life*

The Michigan Agricultural Experiment Station at Michigan State University takes pride in the role it played in advancing agricultural, natural resources and social and behavioral research in 1998.

- The MAES budget continues to be directed by strategic planning and allowed for a productive year.
- Project GREEN (Generating Research and Extension to meet Economic and Environmental Needs), the MSU plan to address long-term research and extension needs in the Michigan plant industries, received \$5 million in funding from the state. The Plant Coalition — made up of representatives from MSU, the plant industries and state government — is reviewing a proposed budget and developing calls for research proposals. The Plant Coalition has three standing committees focusing on various areas of plant agriculture: production agriculture and food safety, value-added and the basic plant sciences. Each area will receive a portion of the funding. Some new positions will be funded through GREEN, including crop integrators, MSUE Area of Expertise agents and diagnosticians. Seventy-five percent of the funding will be used to support programs to benefit the state's plant industries.

Larry Olsen, interim assistant vice provost and associate director of the MAES and MSU Extension, was appointed facilitator of the Plant Coalition. Olsen's new role is to further the goals of the Plant Coalition, which are to sustain and create economic opportunities for Michigan's plant industries; to advance environmentally sound agriculture and ensure food safety; and to enhance excellence in the plant sciences at MSU. He will continue to coach the plant-based Area of Expertise teams, as well as serve as the North Central Pesticide Impact Assessment Programs coordinator and help coordinate the research agenda of selected plant commodity groups.

The Director's Action Team (DAT), a subgroup of the Plant Coalition, is responsible for much of the daily decision making involved with Project GREEN. DAT members are Olsen; Gale Arent, associate director of MSU Extension; Keith Creagh, deputy director of the Michigan Department of Agriculture; and Jim Flore, MAES horticultural researcher. Flore has provided valuable leadership to GREEN, and the MAES appreciates his efforts on its behalf.

- The MAES is conducting a national search for an associate director. Gale Arent, MSUE southwest regional director, was named assistant vice provost/associate director of MSUE for four years. The MAES welcomes him and looks forward to continuing to work closely with MSUE.

- To promote excellence in the plant sciences at MSU, the MAES is working in conjunction with Provost Lou Anna K. Simon to fund four new positions in several departments. Both MAES and non-MAES scientists worked together to identify key areas, and the new positions will strengthen these. The program also includes new scholarships designed to recruit outstanding graduate students in the plant sciences to MSU. Funding from the provost has been key in developing this plan.

- To promote excellence in animal breeding and genetics at MSU, the MAES commissioned a white paper by W. Richard Dukelow, animal science researcher, and Kim Scribner, fisheries and wildlife researcher. The MAES will be using this paper to analyze and develop strengths in these areas and to provide direction to the disciplines.

- The National Food Safety and Toxicology Center is developing a major program in microbial food safety. The MAES has allocated \$250,000 per year for five years to encourage and enhance programs in this area on campus. These funds are being administered by Edward Mather, deputy director of the center and quarter-time MAES assistant director. The "Comparative Risk in Food Safety: The Future Direction for Risk Analysis" conference held at MSU in June was part of this effort.

- Following a pattern of success established by the coalitions created around Michigan's plant and animal industries, the MAES, MSUE, the Office of the Provost and the Institute for Children, Youth and Families have created the Coalition for Children, Youth, Families and Communities (CYFC) to give communities access to research results quickly and easily.

The CYFC Coalition was created to stimulate, facilitate and coordinate MSU's research and outreach efforts related to the health and well-being of children, youth and families; to support and develop the capacity of



Dr. J. Ian Gray

Michigan communities to meet their own needs; and to encourage new directions in scholarship and new applications for problem solving.

The Coalition for CYFC's co-directors are Marguerite Barratt, director of the Institute for Children Youth and Families; Cheri Booth, MSUE associate director; and Jan Bokemeier, assistant director of the MAES and sociology researcher. The MAES looks forward to working closely with Barratt and Booth to achieve the coalition's goals.

- Five, three-year disciplinary grants were funded in 1998. A disciplinary grant program in social and behavioral sciences will begin in 1999.
- The MAES is working to establish a relationship with the Scottish Agricultural College. The two institutions have similar missions and will be able to take advantage of each other's expertise by working collaboratively.
- The Cooperative State Research, Education and Extension Service (CSREES) completed its review of the MSU rural sociology program in 1998 and offered recommendations on how to strengthen it. The departments of Food Science and Human Nutrition, Botany and Plant Pathology, and Animal Science will be reviewed in 1999. The reviews are important as we prepare departments to meet the challenges of the next decade and are used for position planning.
- The MAES enjoys a strong and productive working relationship with many commodity and processor groups and government agencies. The Partnership for Ecosystem Research and Management (PERM) — a joint operating agreement between the MSU departments of Fisheries and Wildlife, Sociology, Geography, and Forestry, and the Michigan Department of Natural Resources Fisheries and Wildlife and Great Lakes Fishery divisions, continues to flourish.

The MAES is working closely with the Michigan Department of Agriculture on the Food Quality Protection Act. In addition, money allocated to Project GREEN is being used to fund two positions at the MDA.

- Lindon Robison, an MSU faculty member since 1977, was chosen to participate in the national administrative leadership development course sponsored by the Experiment Station Committee on Organization and Policy (ESCOP) and the Academic Program Committee on Organization and Policy (ACOP). His leadership

project revolves around the concept of social capital. During his internship, Robison will be working on several new initiatives — one is the social capital initiative that he was instrumental in organizing. While he is using this internship to learn more about the USDA and the MAES, we will benefit from his expertise and insights as well.

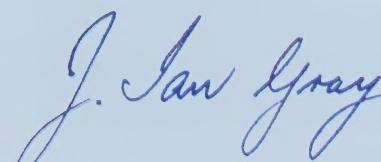
- In 1998, the MAES jumped on the information superhighway and unveiled a new Web site. The address is <<http://www.maes.msu.edu>>. The site contains a searchable database of all MAES projects that are on the CRIS system in Washington, D.C. The database can be searched by researcher name, key word or project number and will allow users to view the projects' objectives and annual progress reports.

Through the site, researchers can access calls for proposals and request an e-mail notification whenever that page is updated. There are also pages devoted to outlying field research stations, including a map and links to individual station pages, as well as links to commodity groups and other agricultural and natural resources organizations. Users may also look at copies of *Futures*, the quarterly magazine of the MAES, and *Messenger*, the monthly newsletter for MAES scientists.

The site is overseen by Joshua Wease, the new MAES Web editor. Before starting with the MAES, Wease worked for two years creating Web pages for the MSU Library.

- In 1998, former MAES director Robert Gast officially retired from MSU. The MAES benefited tremendously from his leadership and we wish him and his wife, Mary Lou, a long and happy retirement.

1999, like each new year, will bring a fresh set of challenges and opportunities. By helping agricultural, natural resources, and social and behavioral sciences identify their strengths and constraints to growth, the Michigan Agricultural Experiment Station is poised to assist them to be competitive and thrive in the next century.



J. Ian Gray, Director

Michigan Agricultural Experiment Station

# *Michigan Agricultural Experiment Station*

As of 10-1-98

**J. Ian Gray**, Associate Vice Provost and Director

**Janet L. Bokemeier**, Assistant Director

**Edward C. Mather**, Assistant Director

**Doreen K. Woodward**, Assistant Director

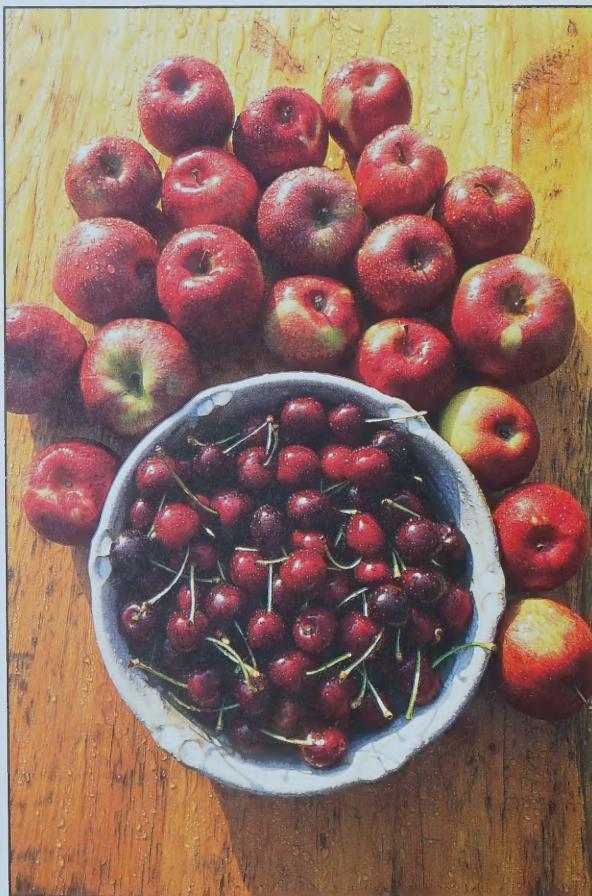
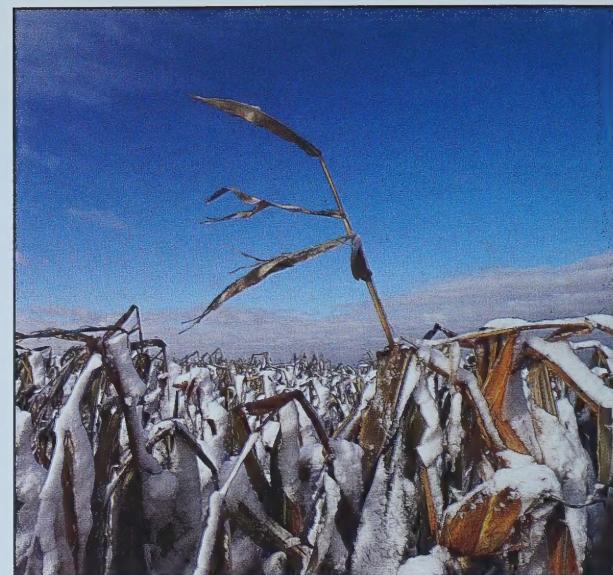
**Debbie McCaffrey**, Administrative Assistant

**Linda Haubert**, Support Staff

**Nan Judy**, Support Staff

**Martha Lovejoy**, Support Staff

**Isidra Pérez**, Support Staff



## *MAES Affiliated Deans*

As of 10-1-98

**Fred L. Poston**, Vice Provost and Dean  
College of Agriculture and Natural Resources

**Julia R. Miller**, Dean  
College of Human Ecology

**George E. Leroi**, Dean  
College of Natural Science

**Kenneth E. Corey**, Dean  
College of Social Science

**Lonnie J. King**, Dean  
College of Veterinary Medicine

# MAES Unit Administrators

(Units receiving base funding)

As of 10-1-98

**Kirk L. Heinze**, Acting Chairperson  
Agricultural and Extension Education

**Michael J. Klug**, Director  
Kellogg Biological Station

**Larry G. Hamm**, Chairperson  
Agricultural Economics

**C. Gerald Haarer**, Director  
Land Management

**Ajit K. Srivastava**, Chairperson  
Agricultural Engineering

**Frederik J. Derksen**, Chairperson  
Large Animal Clinical Sciences

**Maynard G. Hogberg**, Chairperson  
Animal Science

**Jerry B. Dodgson**, Chairperson  
Microbiology

**William L. Smith**, Chairperson  
Biochemistry

**Robert M. Hollingworth**, Director  
National Food Safety and Toxicology Center

**Gustaa A. de Zoeten**, Chairperson  
Botany and Plant Pathology

**Bruce R. Harte**, Director  
School of Packaging

**Boyd G. Ellis**, Chairperson  
Crop and Soil Sciences

**Joseph D. Fridgen**, Chairperson  
Park, Recreation and Tourism Resources

**Stanley L. Flegler**, Acting Director  
Center for Electron Optics

**Willie M. Reed**, Interim Chairperson  
Pathology

**Edward J. Grafiis**, Chairperson  
Entomology

**Mark E. Whalon**, Acting Director  
Pesticide Research Center

**Marjorie J. Kostelnik**, Chairperson  
Family and Child Ecology

**William S. Spielman**, Chairperson  
Physiology

**William W. Taylor**, Chairperson  
Fisheries and Wildlife

**Kenneth Keegstra**, Director  
MSU-DOE Plant Research Laboratory

**Mark A. Uebersax**, Chairperson  
Food Science and Human Nutrition

**Richard E. Groop**, Director  
Center for Remote Sensing

**Daniel E. Keathley**, Chairperson  
Forestry

**Jon F. Bartholic**, Director  
Institute for Water Research

**René C. Hinojosa**, Chairperson  
Geography

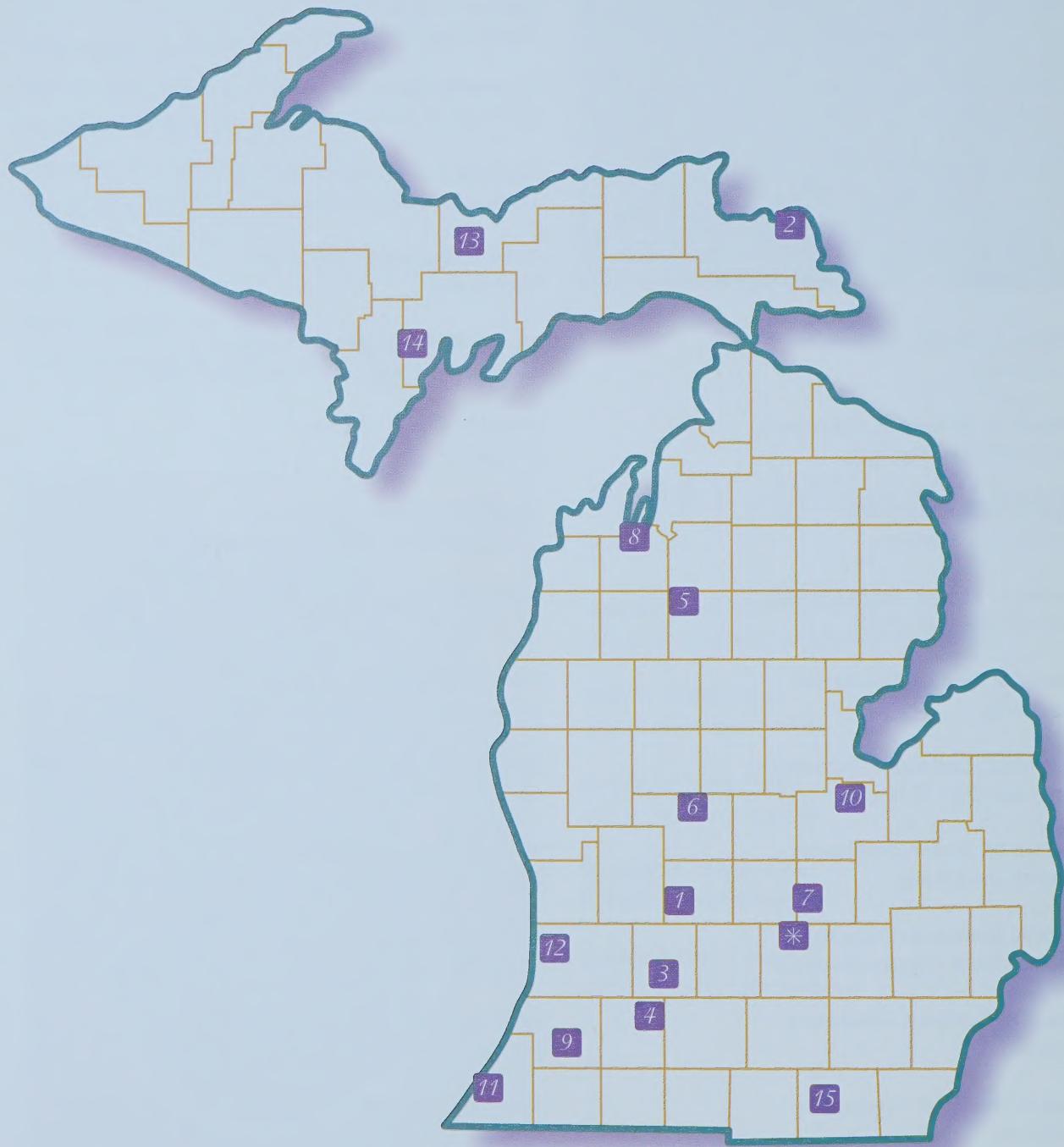
**Cynthia C. Fridgen**, Chairperson  
Resource Development

**Wayne H. Loescher**, Chairperson  
Horticulture

**Christopher K. Vanderpool**, Chairperson  
Sociology

**Dana G. Stewart**, Chairperson  
Human Environment and Design

*Michigan Agricultural Experiment Station*  
*Outlying Stations — 10-1-98*



**1. CLARKSVILLE HORTICULTURAL EXPERIMENT STATION**  
*Established 1974*  
 9302 Portland Road  
 Clarksville, MI 48815  
 Phone: (616) 693-2193  
 FAX: (616) 693-2317  
 Gerald Skeltis  
*Farm Manager*  
 Phil Schwallier  
*Coordinator*

**2. DUNBAR FOREST EXPERIMENT STATION**  
*Established 1925*  
 12839 S. Scenic Drive  
 Rt. 1, Box 179  
 Sault Ste. Marie, MI 49783  
 Phone: (906) 632-3932 or  
 (906) 786-1575  
 Ray Miller  
*Nonresident Forester*

**3. W. K. KELLOGG BIOLOGICAL STATION**  
*Established 1928*  
 3700 E. Gull Lake Drive  
 Hickory Corners, MI 49060  
 FAX: (616) 671-2351  
 Bernie Knezek (517) 353-4569  
*Director, Agricultural Programs*  
 Mike Klug (616) 671-2341  
*Director, Programs and Development*

**4. W. K. KELLOGG EXPERIMENTAL FOREST**  
*Established 1932*  
 7060 N. 42nd Street  
 Augusta, MI 49012  
 Phone: (616) 731-4597  
 FAX: (616) 731-4597  
 Greg Kowalewski  
*Resident Forester*

**5. LAKE CITY EXPERIMENT STATION**  
*Established 1928*  
 5401 W. Jennings Road  
 Lake City, MI 49651  
 Phone: (616) 839-4608  
 Doug Nielsen  
*Farm Manager*

**6. MONTCALM RESEARCH FARM**  
*Established 1966*  
 4747 McBrides Road  
 Lakeview, MI 48850  
 Phone: (517) 365-3473  
 Richard Crawford  
*Research Technician*

**7. MUCK SOILS RESEARCH FARM**  
*Established 1941*  
 Rt. 3  
 9370 E. Herbison Road  
 Laingsburg, MI 48848  
 Phone: (517) 641-4062  
 Ron Gnagey  
*Farm Manager*

**8. NORTHWEST MICHIGAN HORTICULTURAL RESEARCH STATION**  
*Established 1979*  
 6686 S. Center Highway  
 Traverse City, MI 49684  
 Phone: (616) 946-1510  
 FAX: (616) 946-1404  
 James Nugent  
*Coordinator*  
 Bill Klein  
*Farm Manager*

**9. FRED RUSS FOREST EXPERIMENT STATION**  
*Established 1942*  
 20673 Marcellus Highway  
 Decatur, MI 49045  
 Phone: (616) 782-5652 or  
 (616) 731-4597  
 Greg Kowalewski  
*Nonresident Forester*

**10. SAGINAW VALLEY BEET AND BEAN RESEARCH FARM**  
*Established 1971*  
 3066 S. Thomas Road  
 Saginaw, MI 48603  
 Phone: (517) 781-1160  
 FAX: (517) 781-5282  
 Paul Horny  
*Farm Manager*

**11. SOUTHWEST MICHIGAN RESEARCH AND EXTENSION CENTER**  
*Established 1987*  
 1791 Hillandale Road  
 Benton Harbor, MI 49022  
 Phone: (616) 944-1477  
 FAX: (616) 944-3106  
 James Ertman  
*Farm Manager*  
 Thomas Zabadal  
*Coordinator*

**12. TREVOR NICHOLS RESEARCH COMPLEX**  
*Established 1967*  
 6237 124th Avenue  
 Fennville, MI 49408  
 Phone: (616) 561-5040  
 FAX: (616) 561-5314  
 Matthew Daly  
*Farm Manager*

**13. UPPER PENINSULA EXPERIMENT STATION**  
*Established 1899*  
 E3774 University Drive  
 P.O. Box 168  
 Chatham, MI 49816  
 Phone: (906) 439-5114  
 FAX: (906) 439-5698  
 Paul Naasz  
*Operations Supervisor*

**14. UPPER PENINSULA TREE IMPROVEMENT CENTER**  
*Established 1986*  
 6005 J Road  
 Escanaba, MI 49829  
 Phone: (906) 786-1575  
 FAX: (906) 786-9370  
 Ray Miller  
*Resident Forester*

**15. MSU MERILLAT EQUINE CENTER**  
*Established 1997*  
 2828 Wolf Creek Highway  
 Adrian, MI 49221  
 Phone: (517) 265-6779  
 FAX: (517) 263-9294  
 Shorty Parks  
*Farm Manager*

**\* EAST LANSING FIELD RESEARCH FACILITIES**  
*Established 1888*  
 109 Agriculture Hall  
 East Lansing, MI 48824-1039  
 Phone: (517) 355-3272  
 FAX: (517) 353-5406  
 C. Gerald Haarer  
*Director, Land Management*

# Alphabetical List of MAES Scientists

As of 10-1-98

Faculty members with dual MAES appointments are listed in both of the departments in which they serve.

| NAME                           | DEPARTMENT                       | NAME                   | DEPARTMENT                       |
|--------------------------------|----------------------------------|------------------------|----------------------------------|
| Adams, Gerard C.               | Botany and Plant Pathology       | Burton, Jeanne L.      | Animal Science                   |
| Allen, Michael                 | Animal Science                   | Burton, Zachary F.     | Biochemistry                     |
| Allison, Richard F.            | Botany and Plant Pathology       | Busch, Lawrence M.     | Sociology                        |
| Aronoff, Marilyn               | Sociology                        | Bush, Guy L.           | Kellogg Biological Station       |
| Aulerich, Richard J.           | Animal Science                   | Buskirk, Daniel        | Animal Science                   |
| Ayers, George S.               | Entomology                       | Cameron, Arthur C.     | Horticulture                     |
| Bagdasarian, Michael           | Microbiology                     | Campa, Henry III       | Fisheries and Wildlife           |
| Baird, James H.                | Crop and Soil Sciences           | Carlson, William H.    | Horticulture                     |
| Baker, John C.                 | Large Animal Clinical Sciences   | Cash, Jerry N.         | Food Science and Human Nutrition |
| Bakker-Arkema, Fred W.         | Agricultural Engineering         | Champness, Wendy C.    | Microbiology                     |
| Balander, Richard J.           | Animal Science                   | Chenoweth, Wanda L.    | Food Science and Human Nutrition |
| Banks, Bobby D.                | Animal Science                   | Chou, Karen            | Animal Science                   |
| Bates, Ronald O.               | Animal Science                   | Christenson, Donald R. | Crop and Soil Sciences           |
| Batie, Sandra S. <sup>1</sup>  | Agricultural Economics           | Clarke, Robert         | Packaging                        |
| Beaudry, Randolph M.           | Horticulture                     | Coe, Paul H.           | Animal Science                   |
| Beede, David <sup>5</sup>      | Animal Science                   | Coon, Thomas G.        | Fisheries and Wildlife           |
| Behe, Bridget K.               | Horticulture                     | Copeland, Lawrence O.  | Crop and Soil Sciences           |
| Bell, Thomas G.                | Pathology                        | Coussens, Paul M.      | Animal Science                   |
| Bence, James R. <sup>6</sup>   | Fisheries and Wildlife           | Crawford, Eric W.      | Agricultural Economics           |
| Benning, Christoph             | Biochemistry                     | Crum, James L.         | Crop and Soil Sciences           |
| Bennink, Maurice R.            | Food Science and Human Nutrition | de Bruijn, Frans J.    | Microbiology                     |
| Benson, Margaret               | Animal Science                   | de Bruijn, Frans J.    | Plant Research Laboratory        |
| Berglund, Kris A.              | Agricultural Engineering         | D'Itri, Frank M.       | Institute of Water Research      |
| Bickert, William G.            | Agricultural Engineering         | Dazzo, Frank B.        | Crop and Soil Sciences           |
| Biernbaum, John A.             | Horticulture                     | Dazzo, Frank B.        | Microbiology                     |
| Bingen, R. James               | Resource Development             | Dersch, Eckhart        | Resource Development             |
| Bird, George W.                | Entomology                       | DiFonzo, Christina D.  | Pesticide Research Center        |
| Black, J. Roy                  | Agricultural Economics           | Dickmann, Donald I.    | Forestry                         |
| Bokermeier, Janet L.           | Sociology                        | Dilley, David R.       | Horticulture                     |
| Bond, Jenny T.                 | Food Science and Human Nutrition | Dong, Ke               | Entomology                       |
| Booren, Alden M.               | Food Science and Human Nutrition | Douches, David S.      | Crop and Soil Sciences           |
| Bourquin, Leslie D.            | Food Science and Human Nutrition | Doumit, Matthew E.     | Animal Science                   |
| Boyd, Stephen A.               | Crop and Soil Sciences           | Doumit, Matthew E.     | Food Science and Human Nutrition |
| Bremigan, Mary T. <sup>6</sup> | Fisheries and Wildlife           | Downes, Theron W.      | Packaging                        |
| Breznak, John A.               | Microbiology                     | Dukelow, W. Richard    | Physiology                       |
| Bristow, Catherine             | Entomology                       | Dukelow, W. Richard    | Animal Science                   |
| Bronstein, Daniel A.           | Resource Development             | Edens, Thomas C.       | Entomology                       |
| Brook, Roger C.                | Agricultural Engineering         | Edens, Thomas C.       | Resource Development             |
| Bucholtz, Herbert F.           | Animal Science                   | Edson, Charles E.      | Pesticide Research Center        |
| Bursian, Steven                | Animal Science                   | Eicher, Carl K.        | Agricultural Economics           |

| NAME                             | DEPARTMENT                             |
|----------------------------------|--|
| Epperson, Bryan K.               | Forestry                               |
| Ernst, Catherine W.              | Animal Science                         |
| Erskine, Ronald J.               | Large Animal Clinical Sciences         |
| Ferris, Theodore A.              | Animal Science                         |
| Flore, James A.                  | Horticulture                           |
| Fogwell, Ralph L.                | Animal Science                         |
| Foster, Eunice F.                | Crop and Soil Sciences                 |
| Fraker, Pamela J.                | Food Science and Human Nutrition       |
| Fraker, Pamela J.                | Biochemistry                           |
| Freed, Russell D.                | Crop and Soil Sciences                 |
| Fried, Jeremy S.                 | Forestry                               |
| Fulbright, Dennis W.             | Botany and Plant Pathology             |
| Gage, Douglas A.                 | Biochemistry                           |
| Gage, Stuart H.                  | Entomology                             |
| Garling, Donald L.               | Fisheries and Wildlife                 |
| Gerrish, John B.                 | Agricultural Engineering               |
| Giacin, Jack R.                  | Packaging                              |
| Giesy, John P.                   | National Food Safety Toxicology Center |
| Gomez-Duran, Charles O.          | Large Animal Clinical Sciences         |
| Grooms, Daniel L.                | Large Animal Clinical Sciences         |
| Grumet, Rebecca                  | Horticulture                           |
| Gut, Larry                       | Entomology                             |
| Guyer, Daniel E.                 | Agricultural Engineering               |
| Hammerschmidt, Raymond           | Botany and Plant Pathology             |
| Hancock, James F.                | Horticulture                           |
| Hanson, Eric J.                  | Horticulture                           |
| Hanson, Steven D.                | Agricultural Economics                 |
| Harkema, Jack                    | Pathology                              |
| Harris, Craig K.                 | Sociology                              |
| Harsh, Stephen B.                | Agricultural Economics                 |
| Hart, James B., Jr.              | Forestry                               |
| Hart, L. Patrick                 | Botany and Plant Pathology             |
| Harwood, Richard R. <sup>2</sup> | Crop and Soil Sciences                 |
| Hausbeck, Mary K.                | Botany and Plant Pathology             |
| Hausinger, Robert P.             | Biochemistry                           |
| Hausinger, Robert P.             | Microbiology                           |
| Hawkins, David R.                | Animal Science                         |
| Hayes, Daniel B. <sup>6</sup>    | Fisheries and Wildlife                 |
| He, Sheng-Yang                   | Botany and Plant Pathology             |
| Heins, Royal D.                  | Horticulture                           |
| Heinze, Kirk L.                  | Agricultural and Extension Education   |
| Herdt, Thomas H.                 | Large Animal Clinical Sciences         |
| Hernandez, Ruben J.              | Packaging                              |
| Herner, Robert C.                | Horticulture                           |



| NAME                           | DEPARTMENT                             |
|--------------------------------|--|
| Hill, Gretchen M.              | Animal Science                         |
| Hoehn, John P.                 | Agricultural Economics                 |
| Hoerr, Sharon M.               | Food Science and Human Nutrition       |
| Holecek, Donald F.             | Park, Recreation and Tourism Resources |
| Holland, Margo S.              | Pathology                              |
| Holland, Robert E.             | Large Animal Clinical Sciences         |
| Hollingsworth, Rawle I.        | Biochemistry                           |
| Hord, Norman                   | Food Science and Human Nutrition       |
| Howe, Gregg A.                 | Plant Research Laboratory              |
| Howell, Gordon S.              | Horticulture                           |
| Iezzoni, Amy F.                | Horticulture                           |
| Imig, David R.                 | Family and Child Ecology               |
| Ireland, James J.              | Animal Science                         |
| Jacobs, Lee W.                 | Crop and Soil Sciences                 |
| Jarosz, Andrew M.              | Botany and Plant Pathology             |
| Johnson, Nan E.                | Sociology                              |
| Jones, Alan L.                 | Botany and Plant Pathology             |
| Jones, Michael L. <sup>6</sup> | Fisheries and Wildlife                 |
| Jump, Donald B.                | Physiology                             |
| Kaguni, Jon M.                 | Biochemistry                           |
| Kakela, Peter J.               | Resource Development                   |
| Kamdem, Donatien-Pascal        | Forestry                               |
| Kaneene, John B.               | Large Animal Clinical Sciences         |
| Keefe, Dennis R.               | Family and Child Ecology               |
| Keith, Joanne G.               | Family and Child Ecology               |
| Kells, James J., Jr.           | Crop and Soil Sciences                 |
| Kelly, James D.                | Crop and Soil Sciences                 |
| Kelly, John F.                 | Horticulture                           |
| Kielbaso, Julian J.            | Forestry                               |
| Klug, Michael J.               | Microbiology                           |
| Knezek, Bernard D.             | Crop and Soil Sciences                 |
| Kobe, Richard K.               | Forestry                               |
| Kroos, Lee R.                  | Biochemistry                           |

| NAME                            | DEPARTMENT                             | NAME                         | DEPARTMENT                             |
|---------------------------------|--|------------------------------|--|
| Landis, Douglas A.              | Entomology                             | Pierce, Francis J.           | Crop and Soil Sciences                 |
| Lantagne, Douglas O.            | Forestry                               | Poff, Ken                    | Botany and Plant Pathology             |
| Lee, Julian J. L.               | Packaging                              | Potter-Witter, Karen L.      | Forestry                               |
| Leefers, Larry A.               | Forestry                               | Prather, L. Alan             | Botany and Plant Pathology             |
| Leep, Richard H.                | Crop and Soil Sciences                 | Preiss, Jack                 | Biochemistry                           |
| Lenski, Richard E. <sup>3</sup> | Crop and Soil Sciences                 | Price, James F.              | Food Science and Human Nutrition       |
| Levine, S. Joseph               | Agricultural and Extension Education   | Prince, Harold H.            | Fisheries and Wildlife                 |
| Li, Weiming <sup>6</sup>        | Fisheries and Wildlife                 | Propst, Dennis B.            | Park, Recreation and Tourism Resources |
| Linz, John E.                   | Food Science and Human Nutrition       | Pysarchik, Dawn I.           | Human Environment and Design           |
| Liu, Jianguo <sup>6</sup>       | Fisheries and Wildlife                 | Raikhel, Alexander S.        | Entomology                             |
| Lloyd, James W.                 | Agricultural Economics                 | Ramm, Carl W.                | Forestry                               |
| Loudon, Theodore L.             | Agricultural Engineering               | Raper, Kellie K.             | Agricultural Economics                 |
| Lownds, Norman K.               | Horticulture                           | Reddy, C. Adinarayana        | Microbiology                           |
| Maes, Roger K.                  | Microbiology                           | Renner, Karen A.             | Crop and Soil Sciences                 |
| Mao, Ivan Ling                  | Animal Science                         | Ricks, Donald J.             | Agricultural Economics                 |
| Martin, Laura L.                | Agricultural Economics                 | Rieke, Paul E.               | Crop and Soil Sciences                 |
| McCullough, Deborah G.          | Entomology                             | Ritchie, Harlan D.           | Animal Science                         |
| McDonough, Maureen H.           | Forestry                               | Ritchie, Joe T. <sup>4</sup> | Crop and Soil Sciences                 |
| Melakerberhan, Haddish          | Entomology                             | Roberson, Kevin D.           | Animal Science                         |
| Merritt, Richard W.             | Entomology                             | Robertson, G. Philip         | Crop and Soil Sciences                 |
| Miller, James R.                | Entomology                             | Robinson, Norman E.          | Large Animal Clinical Sciences         |
| Mokma, Delbert L.               | Crop and Soil Sciences                 | Robison, Lindon J.           | Agricultural Economics                 |
| Myers, Robert S.                | Agricultural Economics                 | Rogers, John N. III          | Crop and Soil Sciences                 |
| Nair, Muraleedharan G.          | Horticulture                           | Romsos, Dale R.              | Food Science and Human Nutrition       |
| Nelson, Charles M.              | Park, Recreation and Tourism Resources | Rook, Joseph S.              | Large Animal Clinical Sciences         |
| Ng, Perry K. W.                 | Food Science and Human Nutrition       | Rosenbaum, Rene P.           | Resource Development                   |
| Nielsen, Brian D.               | Animal Science                         | Rowe, D. Bradley             | Horticulture                           |
| Norris, Patricia E.             | Agricultural Economics                 | Rozeboom, Dale               | Animal Science                         |
| Norris, Patricia E.             | Resource Development                   | Rudy, Alan P.                | Sociology                              |
| Oehmke, James F.                | Agricultural Economics                 | Rust, Steven                 | Animal Science                         |
| Ofoli, Robert Y.                | Food Science and Human Nutrition       | Ryser, Elliott T.            | Animal Science                         |
| Ohlrogge, John B.               | Botany and Plant Pathology             | Ryser, Elliott T.            | Food Science and Human Nutrition       |
| Orth, Michael                   | Animal Science                         | Safir, Gene R.               | Botany and Plant Pathology             |
| Osburn, Wesley N.               | Animal Science                         | Sang, Tao                    | Botany and Plant Pathology             |
| Osburn, Wesley N.               | Food Science and Human Nutrition       | Schabenberger, Oliver        | Crop and Soil Sciences                 |
| Padgett, George A.              | Pathology                              | Schemmel, Rachelle A.        | Food Science and Human Nutrition       |
| Patterson, Jon S.               | Pathology                              | Schiamborg, Lawrence R.      | Family and Child Ecology               |
| Paul, Eldor A.                  | Crop and Soil Sciences                 | Schilder, Annemiek C.        | Botany and Plant Pathology             |
| Penner, Donald                  | Crop and Soil Sciences                 | Schindler, Melvin S.         | Biochemistry                           |
| Perry, Ronald L.                | Horticulture                           | Schmid, A. Allan             | Agricultural Economics                 |
| Person, Howard L.               | Agricultural Engineering               | Schmidt, Thomas M.           | Microbiology                           |
| Pestka, James J.                | Food Science and Human Nutrition       | Schroeder, Joseph J.         | Food Science and Human Nutrition       |
| Peterson, H. Christopher        | Agricultural Economics                 | Schultink, Gerhardus         | Resource Development                   |
| Peyton, R. Benny                | Fisheries and Wildlife                 | Schutzki, Robert E.          | Horticulture                           |
|                                 |  | Schwab, Gerald D.            | Agricultural Economics                 |

| NAME                          | DEPARTMENT                              | NAME                             | DEPARTMENT                             |
|-------------------------------|---|----------------------------------|--|
| Schweikhardt, David B.        | Agricultural Economics                  | Vargas, Joseph M., Jr.           | Botany and Plant Pathology             |
| Scriber, J. Mark              | Entomology                              | Velicer, Leland F.               | Microbiology                           |
| Scribner, Kim T. <sup>6</sup> | Fisheries and Wildlife                  | Vitosh, Maurice L.               | Crop and Soil Sciences                 |
| Sears, Barbara B.             | Botany and Plant Pathology              | von Bernuth, Robert D.           | Agricultural Engineering               |
| Sears, Phillip M.             | Large Animal Clinical Sciences          | Walker, Edward D.                | Entomology                             |
| Segerlind, Larry J.           | Agricultural Engineering                | Walker, Rosemary A.              | Family and Child Ecology               |
| Singh, Sher Paul              | Packaging                               | Walters, Michael B. <sup>6</sup> | Forestry                               |
| Sink, Kenneth C.              | Horticulture                            | Walton, Jonathan D.              | Plant Research Laboratory              |
| Slocum, Ann C.                | Human Environment and Design            | Wang, John L.                    | Biochemistry                           |
| Smith, Denise M.              | Food Science and Human Nutrition        | Ward, Richard W.                 | Crop and Soil Sciences                 |
| Smith, George W.              | Animal Science                          | Warncke, Darryl D.               | Crop and Soil Sciences                 |
| Smitley, David R.             | Entomology                              | Watson, J. Throck                | Biochemistry                           |
| Smucker, A.J.M.               | Crop and Soil Sciences                  | Weatherspoon, Dave D.            | Agricultural Economics                 |
| Song, Won O.                  | Food Science and Human Nutrition        | Weber, Michael T.                | Agricultural Economics                 |
| Sontag, M. Suzanne            | Human Environment and Design            | Whims, Fred R.                   | Agricultural and Extension Education   |
| Soranno, Patricia A.          | Fisheries and Wildlife                  | Whipple, Judith M.               | Agricultural Economics                 |
| Staatz, John S.               | Agricultural Economics                  | Widders, Irvin E.                | Horticulture                           |
| Steffe, James F.              | Food Science and Human Nutrition        | Winterstein, Scott R.            | Fisheries and Wildlife                 |
| Steffe, James F.              | Agricultural Engineering                | Witter, Scott G.                 | Resource Development                   |
| Stehr, Frederick W.           | Entomology                              | Wolf, Christopher A.             | Agricultural Economics                 |
| Sternquist, Brenda J.         | Human Environment and Design            | Yokoyama, Melvin T.              | Animal Science                         |
| Strasburg, Gale M.            | Food Science and Human Nutrition        | Zabadal, Thomas J.               | Horticulture                           |
| Straw, Barbara E.             | Large Animal Clinical Sciences          | Zabik, Mary E.                   | Food Science and Human Nutrition       |
| Stynes, Daniel J.             | Park, Recreation and Tourism Resources  | Zabik, Matthew J.                | Pesticide Research Center              |
| Surbrook, Truman C.           | Agricultural Engineering                | Zabik, Matthew J.                | Entomology                             |
| Suvedi, Murari                | Agricultural and Extension Education    | Zacharewski, Timothy R.          | National Food Safety Toxicology Center |
| Swinton, Scott M.             | Agricultural Economics                  | Zandstra, Bernard H.             | Horticulture                           |
| Tempelman, Robert             | Animal Science                          | Zanella, Adroaldo                | Animal Science                         |
| Teppen, Brian J.              | Crop and Soil Sciences                  | Zile, Maija H.                   | Food Science and Human Nutrition       |
| Thiem, Suzanne                | Entomology                              |                                  |  |
| Thomashow, Michael F.         | Microbiology                            |                                  |  |
| Thomashow, Michael F.         | Crop and Soil Sciences                  |                                  |  |
| Tiedje, James M.              | Crop and Soil Sciences                  |                                  |  |
| Tiedje, James M.              | Microbiology                            |                                  |  |
| Trail, Frances                | Botany and Plant Pathology              |                                  |  |
| Triebenbacher, Steven J.      | Biochemistry                            |                                  |  |
| Trottier, Nathalie            | Animal Science                          |                                  |  |
| Tucker, H. Allen              | Animal Science                          |                                  |  |
| Ustunol, Zeynep               | Food Science and Human Nutrition        |                                  |  |
| Van Ee, Gary R.               | Agricultural Engineering                |                                  |  |
| VandeHaar, Michael            | Animal Science                          |                                  |  |
| Vander Stoep, Gail A.         | Park, Recreation, and Tourism Resources |                                  |  |
| van Nocker, Steven R.         | Horticulture                            |                                  |  |
| van Ravenswaay, Eileen O.     | Agricultural Economics                  |                                  |  |

<sup>1</sup> Elton Smith Endowed Chair<sup>2</sup> C.S. Mott Distinguished Professor of Sustainable Agriculture<sup>3</sup> Hannah Professor for Microbial Ecology and Plant Sciences<sup>4</sup> Nowlin Professor for Water Research (50 percent of the appointment is paid by the endowment)<sup>5</sup> Clinton Meadows Chair<sup>6</sup> Partnerships for Ecosystem Research and Management (PERM) positions with salary funded by the Michigan Department of Natural Resources

The names listed here represent faculty members who have an MAES appointment and are in the tenure stream as of 10-1-98. Faculty members with dual MAES appointments are listed in both of the departments in which they serve.

| SCIENTISTS  | PROJECTS                             |
|---|--------------------------------------|
| MAES = Michigan Agricultural Experiment Station                       | Projects listed are as of 10-1-98.   |
| MSUE = Michigan State University Extension                            | *Signifies Regional Research Project |
| Joint = Joint appointment in an MAES-affiliated College or Department |                                      |
| 12 = Professor  |                                      |
| 13 = Associate Professor  |                                      |
| 14 = Assistant Professor  |                                      |



## Agricultural and Extension Education

Phone: 355-6580



Kirk L. Heinze, Acting Chair

### FACULTY

|                   | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST                    |
|-------------------|------|-------------|-------------|-------------|-------------------------------------|
| Heinze, Kirk L.   | 13   | 0.20        | 0.00        | 0.80        | Marketing Communication             |
| Levine, S. Joseph | 12   | 0.20        | 0.50        | 0.30        | Faculty Development                 |
| Suvedi, Murari    | 13   | 0.25        | 0.50        | 0.25        | Program Evaluation                  |
| Whims, Fred R.    | 12   | 0.12        | 0.40        | 0.48        | Extension Education/Rural Education |
| <b>TOTALS:</b>    |      | <b>0.77</b> | <b>1.40</b> | <b>1.83</b> |                                     |

### PROJECTS

MICL01752\* The Adoption of Sustainable Farming Systems: Implications to Agricultural Education Suvedi, M.  
 MICL03316 Assessing Retailer/Consumer Perceptions and Use of Michigan-Produced Commodities Heinze, K.  
 MICL03372 Evaluation of Area of Expertise (AOE) Team Approach to Applied Research and Extension in Michigan Suvedi, M.

## Agricultural Economics

Phone: 355-4563



### FACULTY

|                               | RANK | MAES | MSUE | JOINT | AREA OF INTEREST            |
|-------------------------------|------|------|------|-------|-----------------------------|
| Batie, Sandra S. <sup>1</sup> | 12   | 0.60 | 0.20 | 0.20  | Food and Agriculture Policy |
| Black, J. Roy                 | 12   | 0.80 | 0.00 | 0.20  | Farm Management             |
| Crawford, Eric W.             | 12   | 0.40 | 0.35 | 0.25  | International Development   |
| Eicher, Carl K.               | 12   | 0.50 | 0.00 | 0.50  | International Development   |
| Hanson, Steven D.             | 13   | 0.80 | 0.00 | 0.20  | Agricultural Finance        |
| Harsh, Stephen B.             | 12   | 0.20 | 0.65 | 0.15  | Farm Management             |

|                           | RANK | MAES         | MSUE        | JOINT       | AREA OF INTEREST                                   |
|---------------------------|------|--------------|-------------|-------------|--|
| Hoehn, John P.            | 12   | 0.70         | 0.00        | 0.30        | Resource Development                               |
| Lloyd, James W.           | 13   | 0.20         | 0.00        | 0.80        | Livestock Production/Health Management/Food Safety |
| Martin, Laura L.          | 14   | 0.50         | 0.50        | 0.00        | Livestock Industry Management                      |
| Myers, Robert S.          | 12   | 0.80         | 0.00        | 0.20        | International Trade & Price Analysis               |
| Norris, Patricia E.       | 13   | 0.12         | 0.30        | 0.58        | Land Use Management/Public Resource Economics      |
| Oehmke, James F.          | 13   | 0.75         | 0.00        | 0.25        | Price Analysis & Research Policy                   |
| Peterson, H. Christopher  | 13   | 0.40         | 0.00        | 0.60        | Agribusiness                                       |
| Raper, Kellie K.          | 14   | 0.75         | 0.00        | 0.25        | Livestock Industry Marketing Economist             |
| Ricks, Donald J.          | 12   | 0.20         | 0.70        | 0.10        | Marketing  |
| Robison, Lindon J.        | 12   | 0.65         | 0.00        | 0.35        | Production Economics                               |
| Schmid, A. Allan          | 12   | 0.60         | 0.00        | 0.40        | Land Economics/Public Policy                       |
| Schwab, Gerald D.         | 12   | 0.20         | 0.50        | 0.30        | Farm Management                                    |
| Schweikhardt, David B.    | 13   | 0.25         | 0.40        | 0.35        | Agricultural Trade Policy                          |
| Staatz, John S.           | 12   | 0.25         | 0.00        | 0.75        | International Development                          |
| Swinton, Scott M.         | 13   | 0.70         | 0.00        | 0.30        | Production Economics                               |
| van Ravenswaay, Eileen O. | 12   | 0.75         | 0.00        | 0.25        | Public Policy/Food Safety                          |
| Weatherspoon, Dave D.     | 14   | 0.40         | 0.00        | 0.60        | Food & Agribusiness Management                     |
| Weber, Michael T.         | 12   | 0.80         | 0.00        | 0.20        | International Development                          |
| Whipple, Judith M.        | 13   | 0.30         | 0.20        | 0.50        | Food & Agribusiness Management                     |
| Wolf, Christopher A.      | 14   | 0.50         | 0.50        | 0.00        | Dairy Farm Management Economics                    |
| <b>TOTALS:</b>            |      | <b>13.12</b> | <b>4.30</b> | <b>8.58</b> |  |

PROJECTS

|            |  |                    |
|------------|--|--------------------|
| MICL01518* | Benefits and Costs of Resource Policies Affecting Public and Private Land                                      | Hoehn, J.          |
| MICL01519* | Private Strategies, Public Policies, and Food System Performance   | van Ravenswaay, E. |
| MICL01530* | Fruit and Vegetable Supply-Chain Management, Innovations, and Competitiveness                                  | Ricks, D.          |
| MICL01576* | Farm Information Systems   | Harsh, S.          |
| MICL01625  | Financial Decision Making and Investment in Agriculture  | Hanson, S.         |
| MICL01635  | Collective Action in Agriculture, Natural Resources and Rural Development                                      | Schmid, A.         |
| MICL01642* | Impacts of Structural Change in the Dairy Industry   | Wolf, C.           |
| MICL01666* | Impact Analyses and Decision Strategies for Agricultural Research  | Oehmke, J.         |
| MICL01732  | National and International Agricultural Policies and Policy Decision Processes                                 | Schweikhardt, D.   |
| MICL01737  | Changing Private and Public Roles in Technology Development, Technology Transfer and Seed Distribution         | Eicher, C.         |
| MICL01744  | Agricultural Economics Research on International Agricultural Development and Environmental Issues             | Eicher, C.         |
| MICL01770  | Economic Analysis of Public Policies Affecting the Performance of Michigan Agriculture                         | Batie, S.          |
| MICL01788  | Economic Analysis of Tactical and Operational Decisions on Farms and Design/Development of Information Systems | Harsh, S.          |
| MICL01790  | Structural Adjustments in Michigan's Pork and Beef Sectors   | Black, J.          |
| MICL01815  | The Political Economy of U.S. Agricultural Research, Commodity and Trade Policy                                | Oehmke, J.         |
| MICL01844  | Risk Analysis and Management in U.S. Agriculture   | Myers, R.          |
| MICL01850  | The Role of Information and Market Transactions in Land Use Policy   | Norris, P.         |

# Agricultural Economics

(continued)

|           |  |             |
|-----------|--|-------------|
| MICL01865 | Role of Information and Transactions Costs in Coordination of Global Food Systems              | Staatz, J.  |
| MICL01876 | Organization, Coordination, and Performance of U.S. Livestock and Meat Industries              | Koontz, S.  |
| MICL01889 | Social Capital, Terms of Trade, and the Internalization of Externalities                       | Robison, L. |
| MICL03333 | Improved Marketing and Competitiveness for Michigan Fruit Industries                           | Ricks, D.   |
| MICL03356 | Economics of Vertical Coordination and Intensive Production in Michigan's Livestock Industries | Martin, L.  |
| MICL08153 | Rural <i>Colonias</i> in the Southwest: Conditions and Implications                            | Rochin, R.  |
| MICL08201 | Enhancing Rural Economies Through Comprehensive Extension, Research and Partnering Approaches  | Moser, C.   |
| MICL08204 | Social Capital: An International Conference Bridging Disciplines, Policies and Communities     | Robison, L. |

# Agricultural Engineering

Phone: 355-4720

Ajit K. Srivastava,  
Chair

| FACULTY                |    | RANK        | MAES        | MSUE        | JOINT | AREA OF INTEREST                                  |
|------------------------|----|-------------|-------------|-------------|-------|---|
| Bakker-Arkema, Fred W. | 12 | 0.65        | 0.00        | 0.35        |       | Grain Dry Storage                                 |
| Berglund, Kris A.      | 12 | 0.49        | 0.00        | 0.51        |       | Biotechnology/Food Engineering                    |
| Bickert, William G.    | 12 | 0.20        | 0.80        | 0.00        |       | Livestock Facilities/Environment                  |
| Brook, Roger C.        | 12 | 0.25        | 0.75        | 0.00        |       | Postharvest Handling, Storage, Drying             |
| Gerrish, John B.       | 12 | 0.40        | 0.00        | 0.60        |       | Electronics/Odor Control                          |
| Guyer, Daniel E.       | 13 | 0.25        | 0.75        | 0.00        |       | Fruit/Vegetable Storage/Handling                  |
| Loudon, Theodore L.    | 12 | 0.30        | 0.70        | 0.00        |       | Irrigation/Waste Water Treatment                  |
| Person, Howard L.      | 13 | 0.30        | 0.70        | 0.00        |       | Agricultural Structures/Livestock/Waste Treatment |
| Segerlind, Larry J.    | 12 | 0.35        | 0.00        | 0.65        |       | Finite Element Analysis/Structures                |
| Steffe, James F.       | 12 | 0.35        | 0.00        | 0.65        |       | Food Engineering/Rheology                         |
| Surbrook, Truman C.    | 12 | 0.25        | 0.00        | 0.75        |       | Electrical Technology /Stray Voltage              |
| Van Ee, Gary R.        | 12 | 0.65        | 0.00        | 0.35        |       | Chemical Application/Power & Machinery            |
| von Bernuth, Robert D. | 12 | 0.36        | 0.26        | 0.38        |       | Manure Management                                 |
| <b>TOTALS:</b>         |    | <b>4.80</b> | <b>3.96</b> | <b>4.24</b> |       |   |

## PROJECTS

|            |  |                   |
|------------|--|-------------------|
| MICL01245* | Improvement of Thermal Processes for Foods   | Steffe, J.        |
| MICL01579  | Development of Machine Concepts for Mechanized Agriculture   | Ledebuhr, R.      |
| MICL01581  | Value-Added Quality Control Techniques in the Postharvest Stages of Fruit and Vegetable Products   | Guyer, D.         |
| MICL01591* | Microirrigation: Management Practices to Sustain Water Quality and Agricultural Productivity       | von Bernuth, R.   |
| MICL01676* | Technology and Principles for Assessing and Retaining Postharvest Quality of Fruits and Vegetables | Guyer, D.         |
| MICL01726  | Laser Spectroscopy for Analysis of Crystallization Processes                                       | Berglund, K.      |
| MICL01738* | Marketing and Delivery of Quality Cereals and Oilseeds   | Bakker-Arkema, F. |
| MICL01767  | Development of Chemical Application Technology for Agribusiness                                    | Van Ee, G.        |
| MICL01777  | Engineering for Food Quality and Safety  | Brook, R.         |
| MICL01784  | Marketing and Delivery of Quality Cereals and Oilseeds   | Bakker-Arkema, F. |
| MICL01787  | Improvement of Small-Scale Decentralized and Onsite Wastewater Treatment and Disposal              | Loudon, T.        |
| MICL01793  | Dimensional Analysis and Scale Modeling in Biosystems Engineering                                  | Srivastava, A.    |

# Agricultural Engineering

(continued)

|            |   |                 |
|------------|---|-----------------|
| MICL01794  | Analysis and Characterization of Biosystems   | Gerrish, J.     |
| MICL01799  | Designing Dairy Facilities to Enhance Management and to Meet Animals' Needs                         | Bickert, W.     |
| MICL01809  | Deposition Efficiency of Chemical Application   | Wilkinson, R.   |
| MICL01862  | Neutral-To-Earth Voltage Reduction on Livestock Farms   | Surbrook, T.    |
| MICL01883  | Facilitating Beneficial Use of Livestock Manure   | Person, H.      |
| MICL01888* | Animal Manure and Waste Utilization, Treatment and Nuisance Avoidance for a Sustainable Agriculture | von Bernuth, R. |
| MICL08180  | Rheology and Protein Chemistry of "Undeveloped" Dough   | Steffe, J.      |



Photo by Ann Barnes

## Animal Science

Phone: 355-8383

Maynard G. Hogberg,  
Chair

## FACULTY

|                           | RANK | MAES | MSUE | JOINT | AREA OF INTEREST                             |
|---------------------------|------|------|------|-------|--|
| Allen, Michael            | 12   | 0.50 | 0.50 | 0.00  | Forage Nutrition                             |
| Aulerich, Richard J.      | 12   | 0.75 | 0.25 | 0.00  | Fur-bearing Animals/Nutrition/<br>Toxicology |
| Balander, Richard J.      | 13   | 0.40 | 0.00 | 0.60  | Avian Physiology/Reproduction                |
| Banks, Bobby D.           | 12   | 0.25 | 0.00 | 0.75  | Animal Genetics                              |
| Bates, Ronald O.          | 14   | 0.20 | 0.80 | 0.00  | Swine Genetics/Management                    |
| Beede, David <sup>5</sup> | 12   | 0.50 | 0.35 | 0.15  | Dairy Nutrition/Dairy Management             |
| Benson, Margaret          | 12   | 0.20 | 0.50 | 0.30  | Ruminant Nutrition/Sheep                     |
| Bucholtz, Herbert F.      | 12   | 0.15 | 0.70 | 0.15  | Dairy Nutrition/Management                   |
| Bursian, Steven           | 12   | 0.85 | 0.00 | 0.15  | Avian Physiology/Toxicology                  |
| Burton, Jeanne L.         | 14   | 0.80 | 0.00 | 0.20  | Molecular Genetics/Dairy Cattle              |
| Buskirk, Daniel           | 14   | 0.50 | 0.50 | 0.00  | Ruminant Nutrition/Beef                      |
| Chou, Karen               | 13   | 0.80 | 0.00 | 0.20  | Toxicology                                   |
| Coe, Paul H.              | 13   | 0.20 | 0.00 | 0.80  | Animal Health                                |
| Coussens, Paul M.         | 13   | 0.80 | 0.00 | 0.20  | Molecular Biology                            |
| Doumit, Matthew E.        | 14   | 0.25 | 0.00 | 0.75  | Meat Science/Muscle Biology                  |
| Dukelow, W. Richard       | 12   | 0.25 | 0.00 | 0.75  | Reproductive Physiology                      |
| Ernst, Catherine W.       | 14   | 0.80 | 0.00 | 0.20  | Meat Animal Genetics                         |
| Ferris, Theodore A.       | 12   | 0.20 | 0.80 | 0.00  | Dairy Genetics                               |
| Fogwell, Ralph L.         | 12   | 0.30 | 0.50 | 0.20  | Physiology                                   |
| Hawkins, David R.         | 12   | 0.15 | 0.00 | 0.85  | Beef Cattle Nutrition/Management             |
| Hill, Gretchen M.         | 13   | 0.85 | 0.00 | 0.15  | Swine Nutrition                              |
| Ireland, James J.         | 12   | 0.95 | 0.00 | 0.05  | Physiology                                   |

# Animal Science

(continued)

|                     | RANK | MAES         | MSUE        | JOINT        | AREA OF INTEREST                 |
|---------------------|------|--------------|-------------|--------------|----------------------------------|
| Mao, Ivan Ling      | 12   | 0.95         | 0.00        | 0.05         | Dairy Genetics                   |
| Nielsen, Brian D.   | 14   | 0.60         | 0.00        | 0.40         | Equine Exercise Physiology       |
| Orth, Michael       | 14   | 0.80         | 0.00        | 0.20         | Turkey Nutrition/Growth Biology  |
| Osburn, Wesley N.   | 14   | 0.25         | 0.00        | 0.75         | Meat Science                     |
| Ritchie, Harlan D.  | 12   | 0.10         | 0.90        | 0.00         | Beef Cattle Nutrition/Management |
| Roberson, Kevin D.  | 14   | 0.35         | 0.65        | 0.00         | Poultry Nutrition/Management     |
| Rozeboom, Dale      | 13   | 0.15         | 0.70        | 0.15         | Swine Nutrition/Management       |
| Rust, Steven        | 12   | 0.50         | 0.50        | 0.00         | Beef Feedlot Nutrition           |
| Ryser, Elliott T.   | 14   | 0.17         | 0.00        | 0.83         | Dairy Manufacturing/Microbiology |
| Smith, George W.    | 14   | 0.75         | 0.00        | 0.25         | Reproductive Physiology          |
| Tempelman, Robert   | 14   | 0.50         | 0.00        | 0.50         | Statistics                       |
| Trottier, Nathalie  | 14   | 0.40         | 0.00        | 0.60         | Swine Nutrition/Management       |
| Tucker, H. Allen    | 12   | 0.85         | 0.00        | 0.15         | Physiology/Lactation             |
| VandeHaar, Michael  | 13   | 0.65         | 0.00        | 0.35         | Dairy Nutrition                  |
| Yokoyama, Melvin T. | 12   | 0.85         | 0.00        | 0.15         | Animal Nutrition/Microbiology    |
| Zanella, Adroaldo   | 14   | 0.75         | 0.00        | 0.25         | Ethology/Stress Physiology       |
| <b>TOTALS:</b>      |      | <b>19.27</b> | <b>7.65</b> | <b>11.08</b> |                                  |

## PROJECTS

|            |  |               |
|------------|--|---------------|
| MICL01039  | Fur Animal Studies (Mink)  | Aulerich, R.  |
| MICL01156* | Management Systems for Improved Decision Making and Profitability of Dairy Herds                 | Beede, D.     |
| MICL01163  | Factors Controlling Growth and Lactation   | Tucker, H.    |
| MICL01178  | New Breeding Strategies to Maximize the Efficiency of Dairy Cattle Improvement                   | Mao, I.       |
| MICL01182* | Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation                       | Doumit, M.    |
| MICL01196* | Methods to Increase Reproductive Efficiency in Cattle  | Fogwell, R.   |
| MICL01521* | Metabolic Relationships in Supply of Nutrients for Lactating Cows                                | VandeHaar, M. |
| MICL01573  | Development of Chimeric Antigens as Vaccines to Regulate Fertility                               | Ireland, J.   |
| MICL01604  | Increasing Efficiency of Protein Production in Dairy Cattle                                      | VandeHaar, M. |
| MICL01622  | Environmental Chemical Influences on Reproduction  | Chou, K.      |
| MICL01643  | Microbial Ecology of Rumen, Gastrointestinal Tract, Ensiled Feeds and Livestock                  | Yokoyama, M.  |
| MICL01652* | Environmental and Economic Impacts of Nutrient Flows in Dairy Forage Systems                     | Allen, M.     |
| MICL01691* | Genetic Improvement of Cattle Using Molecular Genetic Information                                | Mao, I.       |
| MICL01727  | The Fate and Biological Effects of Xenobiotics in Animals  | Bursian, S.   |
| MICL01760  | Effects of Specific Nutrients on Health and Productivity of Swine                                | Hill, G.      |
| MICL01800  | Optimizing Nutrition and Management of Dry, Peripartum and Early Lactation Dairy Cows            | Beede, D.     |
| MICL01802  | Optimizing the Nutritional Utilization of Forages by Dairy Cattle                                | Allen, M.     |
| MICL01803  | Nutritional, Management and Other Applied Studies Using Poultry and Other Avian Species          | Balander, R.  |
| MICL01818* | Biophysical Models for Poultry Production Systems  | Rahn, A.      |
| MICL01822  | Advanced Biometrical Techniques for Genetic Inference in Livestock Populations                   | Tempelman, R. |
| MICL01823  | Methods to Enhance Decision Making by Dairy Producers and Artificial Insemination of Bull Studs  | Ferris, T.    |
| MICL01836  | Genetic Basis of Parturition-Induced Immunosuppression and Mastitis Susceptibility in Dairy Cows | Burton, J.    |
| MICL01852  | Understanding Growth Plate Cartilage Turnover in Meat Producing Birds                            | Orth, M.      |
| MICL01853  | Assessment of Behavioral and Physiological Responses of Animals to Difficult Situations          | Zanella, A.   |
| MICL01854  | Optimizing Protein and Amino Acid Utilization of Growing Pigs and Gestating and Lactating Sows   | Trottier, N.  |

|            |  |              |
|------------|--|--------------|
| MICL01861  | Management of Athletic Horses to Reduce Musculoskeletal Injuries and Improve Performance       | Nielsen, B.  |
| MICL01873* | Positional and Functional Identification of Economically Important Genes in the Pig            | Ernst, C.    |
| MICL01875  | Using Milk Yield to Schedule Insemination in Dairy Cows  | Fogwell, R.  |
| MICL01877  | Genetic Management and Control of Growth Carcass Merit and Quality                             | Bates, R.    |
| MICL01879  | Pre- and Postharvest Processing Strategies to Improve the Value of Muscle Food Products        | Osburn, W.   |
| MICL01880  | Regulation of Skeletal Muscle Growth and Meat Quality  | Doumit, M.   |
| MICL01885* | Integration of Quantitative and Molecular Technologies for Genetic Improvement of Pigs         | Bates, R.    |
| MICL01890  | Mechanisms of Ovulation in Dairy Cattle  | Smith, G.    |
| MICL03340  | Nutrition and Feeding Management for Michigan Dairy Herds                                      | Bucholtz, H. |
| MICL03360  | Feeding and Management Regimes for Efficient Utilization of Michigan Feedstuffs by Beef Cattle | Buskirk, D.  |
| MICL03366  | Utilization of Genetic Resources for the Improvement of Livestock Populations                  | Banks, B.    |
| MICL06880  | Oncogenic Alphaherpesvirus Gene Expression   | Coussens, P. |
| MICL06883  | The Use of Propionibacterium for Prevention of Lactic Acidosis                                 | Rust, S.     |
| MICL06888  | Does Nitric Oxide Regulate Growth Plate Cartilage Turnover?                                    | Orth, M.     |
| MICL06889  | Identification of PCR-RFLPs in Glucocorticoid Receptor Genes of Pedigreed Cattle               | Burton, J.   |
| MICL08146  | Effects of Inhibins and Their Subunits On Gonadal Function in Heifers                          | Ireland, J.  |
| MICL08186  | Aminergic Regulation of Growth Hormone Secretion in Cattle                                     | Tucker, H.   |

## Biochemistry

Phone: 355-1600

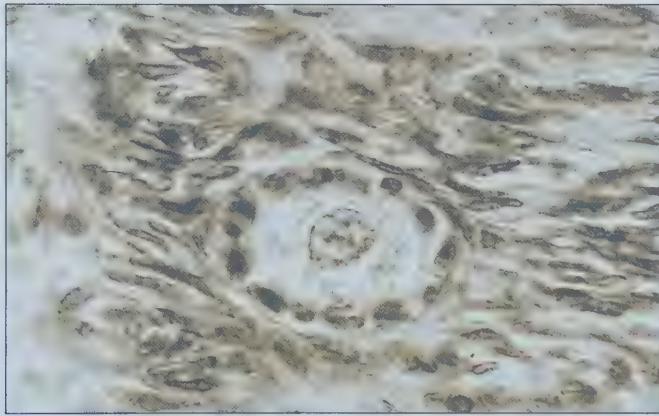


Photo by MSU Photo Lab Information Services



William L. Smith, Chair

### FACULTY

|                         | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST             |
|-------------------------|------|-------------|-------------|-------------|------------------------------|
| Benning, Christoph      | 14   | 0.67        | 0.00        | 0.33        | Plant Biochemistry           |
| Burton, Zachary F.      | 13   | 0.20        | 0.00        | 0.80        | Molecular Biology            |
| Fraker, Pamela J.       | 12   | 0.30        | 0.00        | 0.70        | Immunology                   |
| Gage, Douglas A.        | 14   | 0.56        | 0.00        | 0.44        | Plant Biochemistry           |
| Hausinger, Robert P.    | 12   | 0.25        | 0.00        | 0.75        | Enzymology                   |
| Hollingsworth, Rawle I. | 12   | 0.25        | 0.00        | 0.75        | Renewable Resource Chemistry |
| Kaguni, Jon M.          | 12   | 0.58        | 0.00        | 0.42        | Molecular Biology            |
| Kroos, Lee R.           | 12   | 0.56        | 0.00        | 0.44        | Molecular Biology            |
| Preiss, Jack            | 12   | 0.25        | 0.00        | 0.75        | Starch Biochemistry          |
| Schindler, Melvin S.    | 12   | 0.35        | 0.00        | 0.65        | Cell Biology                 |
| Triezenberg, Steven J.  | 12   | 0.16        | 0.00        | 0.84        | Molecular Biology            |
| Wang, John L.           | 12   | 0.20        | 0.00        | 0.80        | Cell Biology                 |
| Watson, J. Throck       | 12   | 0.50        | 0.00        | 0.50        | Analytical Biochemistry      |
| <b>TOTALS:</b>          |      | <b>4.83</b> | <b>0.00</b> | <b>8.17</b> |                              |

# Biochemistry

(continued)

|            |  |                 |
|------------|--|-----------------|
| MICL01290* | Regulation of Photosynthetic Processes   | Preiss, J.      |
| MICL01598  | Gene Regulation During Development of Soil Bacteria  | Kroos, L.       |
| MICL01601  | DNA Replication and Its Regulation in <i>Escherichia coli</i>  | Kaguni, J.      |
| MICL01608  | Activation of Gene Expression by a Herpes Simplex Virion Protein                                       | Triezenberg, S. |
| MICL01610  | Transcription Factors That Bind to RNA Polymerase II   | Burton, Z.      |
| MICL01614  | Interaction of Rhizobium With Soybean Cells  | Wang, J.        |
| MICL01754  | Protein Structure Elucidation Using MALDI-Mass Spectrometry  | Watson, J.      |
| MICL01781  | Mechanism of Aluminum Toxicity — Optical Trap Measurements of Cytoskeletal Dysfunction in Living Cells | Schindler, M.   |
| MICL01816  | Biosynthesis of the Plant Osmoprotectant Dimethylsulfoniopropionate (DMSP)                             | Gage, D.        |
| MICL08162  | Branching Enzyme and Starch Synthase Isoforms in Starch Synthesis                                      | Preiss, J.      |
| MICL08179  | Genetic Engineering of Amylopullulanses for Agricultural Bioprocessing                                 | Zeikus, J.      |
| MICL08219  | Role of Oxylipins in the Regulation of Plant Defense   | Howe, G.        |



# Botany and Plant Pathology

Phone: 355-4683



Gustaaf A. de Zoeten,  
Chair

| FACULTY                | RANK | MAES | MSUE | JOINT | AREA OF INTEREST  |
|------------------------|------|------|------|-------|---|
| Adams, Gerard C.       | 13   | 0.55 | 0.27 | 0.18  | Plant Pathology/Mycology  |
| Allison, Richard F.    | 13   | 0.75 | 0.00 | 0.25  | Plant Molecular Virology  |
| Fulbright, Dennis W.   | 12   | 0.83 | 0.00 | 0.17  | Plant Pathology/Plant Pathogen Genetics                               |
| Hammerschmidt, Raymond | 12   | 0.83 | 0.00 | 0.17  | Plant Pathology/Biochemistry/Physiology/Plant Disease Resistance      |
| Hart, L. Patrick       | 12   | 0.40 | 0.50 | 0.10  | Plant Pathology/Field Crops   |
| Hausbeck, Mary K.      | 13   | 0.29 | 0.61 | 0.10  | Plant Pathology/Ornamentals, Vegetables & Greenhouse Crops            |
| He, Sheng-Yang         | 14   | 0.25 | 0.00 | 0.75  | Molecular Biology/Plant-Pathogen Interactions                         |
| Jarosz, Andrew M.      | 13   | 0.75 | 0.00 | 0.25  | Plant Pathology/Pathogen Epidemiology                                 |
| Jones, Alan L.         | 12   | 0.50 | 0.40 | 0.10  | Plant Pathology/Fruit Tree Crops                                      |
| Ohlrogge, John B.      | 12   | 0.84 | 0.00 | 0.16  | Plant Physiology/Biochemistry/Molecular Biology/Plant Lipid Synthesis |
| Poff, Ken              | 12   | 0.25 | 0.00 | 0.75  | Plant Physiology  |
| Prather, L. Alan       | 14   | 0.25 | 0.00 | 0.75  | Plant Systematics   |
| Safir, Gene R.         | 12   | 0.90 | 0.00 | 0.10  | Plant Pathology/Mycorrhizal Fungi                                     |
| Sang, Tao              | 14   | 0.25 | 0.00 | 0.75  | Plant Systematics & Molecular Evolution                               |
| Schilder, Annemiek C.  | 14   | 0.45 | 0.45 | 0.10  | Plant Pathology/Small Fruits  |

# Botany and Plant Pathology

(continued)

|                        | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST                             |
|------------------------|------|-------------|-------------|-------------|--|
| Sears, Barbara B.      | 12   | 0.25        | 0.00        | 0.75        | Molecular Biology & Plant Organelle Genetics |
| Trail, Frances         | 14   | 0.27        | 0.00        | 0.73        | Host Pathogen Interactions                   |
| Vargas, Joseph M., Jr. | 12   | 0.26        | 0.49        | 0.25        | Plant Pathology/Diseases/Sod & Turf          |
| <b>TOTALS:</b>         |      | <b>8.87</b> | <b>2.72</b> | <b>6.41</b> |  |

## PROJECTS

|            |  |                   |
|------------|--|-------------------|
| MICL01206* | Biocontrol of Soil-Borne Plant Pathogens   | Safir, G.         |
| MICL01259* | <i>Fusarium</i> Mycotoxins in Cereal Grains  | Hart, L.          |
| MICL01408* | Biological Improvement of Chestnut and Management of Chestnut Pathogens and Pests              | Fulbright, D.     |
| MICL01499  | Control and Utilization of VA Mycorrhizal Root Colonization                                    | Safir, G.         |
| MICL01533  | Genetic Engineering of Oilseed Crops   | Ohlrogge, J.      |
| MICL01562  | Physiology of Resistance and Induced Resistance to Disease in Potato                           | Hammerschmidt, R. |
| MICL01662  | Avirulent Fungal and Bacterial Plant Pathogens: Their Role and Fate in Plant Disease Epidemics | Fulbright, D.     |
| MICL01673  | Biology and Control of Pathogens of Field Crops  | Hart, L.          |
| MICL01679  | <i>Plastome mutator</i> of Oenothera: A Nuclear Gene That Causes Chloroplast DNA Mutations     | Sears, B.         |
| MICL01756* | Multidisciplinary Evaluation of New Apple Cultivars  | Jones, A.         |
| MICL01808  | Recombination Between Viral RNA and Transgenic Plant Transcripts                               | Allison, R.       |
| MICL01827  | Complementation of Movement Function Between Genetic Components of Pea Enation Mosaic Virus    | de Zoeten, G.     |
| MICL01832  | Management of Turfgrass Diseases   | Vargas, J.        |
| MICL01843  | Cryptic Plant Pathogenic Fungi: Biology of Latent Pathogens in Symptomless Trees               | Adams, G.         |
| MICL01896  | Phylogeny of the Rice Genus, <i>Oryza</i> , and Evolution of Rice Disease Resistance Genes     | Sang, T.          |
| MICL03183  | Diseases of Tree Fruit Crops and Their Control   | Jones, A.         |
| MICL07618  | Control of Bacterial Diseases in Vegetable Transplants in the Greenhouse                       | Hausbeck, M.      |
| MICL07619  | Controlling Fire Blight Disease of Apple Trees   | Jones, A.         |
| MICL08140  | Control of Thiaabendazole-Resistant <i>Fusarium sambucinum</i> Causing Dry Rot of Potato       | Jarosz, A.        |
| MICL08167  | Recombination Between Viral RNA and Transgenic Plant Transcripts                               | Allison, R.       |
| MICL08174  | Controls of Chloroplast Inheritance  | Sears, B.         |
| MICL08203  | Factors Affecting Recombination Frequency Between Plant Viruses and Viral Transgenes           | Allison, R.       |
| MICL08216  | Production of Acetylated Glycerides in Transgenic Oil Crops                                    | Pollard, M.       |

# Chemical Engineering

Phone: 355-5135

## PROJECTS

|           |   |              |
|-----------|---|--------------|
| MICL07602 | Bioprocessing for Utilization of Agricultural Raw Materials | Berglund, K. |
| MICL07621 | Bioprocessing for Utilization of Agricultural Raw Materials | Berglund, K. |
| MICL08136 | Catalytic Upgrading of Lactic Acid                          | Miller, D.   |
| MICL08193 | Multiphase Biocatalysis Using Reversible Aphrons            | Worden, R.   |

# Chemistry

Phone: 355-9715

**PROJECTS**

|           |  |  |
|-----------|--|--|
| MICL08160 | Environmentally Compatible Synthesis of Value-Added Chemicals From D-Glucose |  |
| MICL08172 | Charge Separation and Stabilization in Chloroplast Photosystem II            |  |
| MICL08208 | Environmentally Compatible Synthesis of Value-Added Chemicals From D-Glucose |  |
| MICL08214 | Charge Separation and Stabilization in Chloroplast Photosystem II            |  |

Frost, J.  
Babcock, G.  
Frost, J.  
Babcock, G.

# Crop and Soil Sciences

Phone: 355-0271



Boyd G. Ellis, Chair

**FACULTY**

|                                  | RANK | MAES | MSUE | JOINT | AREA OF INTEREST                         |
|----------------------------------|------|------|------|-------|--|
| Baird, James H.                  | 14   | 0.70 | 0.00 | 0.30  | Turfgrass Management                     |
| Boyd, Stephen A.                 | 12   | 0.75 | 0.00 | 0.25  | Environmental Soil Chemistry             |
| Christenson, Donald R.           | 12   | 0.35 | 0.50 | 0.15  | Soil Fertility/Management                |
| Copeland, Lawrence O.            | 12   | 0.15 | 0.75 | 0.10  | Seed/Grain Technology                    |
| Crum, James L.                   | 12   | 0.25 | 0.00 | 0.75  | Soil Class/Genesis/Turfgrass             |
| Dazzo, Frank B.                  | 12   | 0.10 | 0.00 | 0.90  | Microbial Ecology                        |
| Douches, David S.                | 13   | 0.90 | 0.00 | 0.10  | Potato Breeding/Genetics                 |
| Foster, Eunice F.                | 12   | 0.15 | 0.00 | 0.85  | Crop Physiology                          |
| Freed, Russell D.                | 12   | 0.50 | 0.00 | 0.50  | International Agronomy/Plant Breeding    |
| Harwood, Richard R. <sup>2</sup> | 12   | 0.60 | 0.20 | 0.20  | Sustainable Agriculture                  |
| Jacobs, Lee W.                   | 12   | 0.50 | 0.50 | 0.00  | Environmental Waste Management           |
| Kells, James J., Jr.             | 12   | 0.25 | 0.60 | 0.15  | Weed Science                             |
| Kelly, James D.                  | 12   | 0.75 | 0.00 | 0.25  | Dry Bean Breeding                        |
| Knezek, Bernard D.               | 12   | 0.50 | 0.00 | 0.50  | Micronutrient/Waste Utilization          |
| Leep, Richard H.                 | 12   | 0.35 | 0.50 | 0.15  | Soil Fertility/Forage Management         |
| Lenski, Richard E. <sup>3</sup>  | 12   | 0.40 | 0.00 | 0.60  | Microbial Ecology & Evolutionary Biology |
| Mokma, Delbert L.                | 12   | 0.50 | 0.15 | 0.35  | Soil Classification/Genesis              |
| Paul, Eldor A.                   | 12   | 0.62 | 0.14 | 0.24  | Soil Microbiology                        |

# Crop and Soil Sciences

(continued)

|                              | RANK | MAES         | MSUE        | JOINT        | AREA OF INTEREST                     |
|------------------------------|------|--------------|-------------|--------------|--------------------------------------|
| Penner, Donald               | 12   | 0.80         | 0.00        | 0.20         | Crop/Weed/Physiology                 |
| Pierce, Francis J.           | 12   | 0.70         | 0.00        | 0.30         | Soil Management Systems              |
| Renner, Karen A.             | 12   | 0.50         | 0.50        | 0.00         | Weed Science                         |
| Rieke, Paul E.               | 12   | 0.35         | 0.50        | 0.15         | Turfgrass Management                 |
| Ritchie, Joe T. <sup>4</sup> | 12   | 0.00         | 0.50        | 0.00         | Soil Physics/Plant Stress            |
| Robertson, G. Philip         | 12   | 0.38         | 0.00        | 0.62         | Ecosystem Ecology                    |
| Rogers, John N. III.         | 13   | 0.25         | 0.00        | 0.75         | Turfgrass Management                 |
| Schabenberger, Oliver        | 14   | 0.40         | 0.00        | 0.60         | Statistician                         |
| Smucker, A.J.M.              | 12   | 0.75         | 0.00        | 0.25         | Soil Biophysics                      |
| Tepper, Brian J.             | 14   | 0.75         | 0.00        | 0.25         | Surface Soil Chemistry               |
| Thomashow, Michael F.        | 12   | 0.76         | 0.00        | 0.24         | Plant & Microbial Molecular Genetics |
| Tiedje, James M.             | 12   | 0.60         | 0.00        | 0.40         | Soil Microbiology/Microbial Ecology  |
| Vitosh, Maurice L.           | 12   | 0.30         | 0.70        | 0.00         | Soil Fertilization Management        |
| Ward, Richard W.             | 13   | 0.75         | 0.00        | 0.25         | Wheat Breeding                       |
| Warncke, Darryl D.           | 12   | 0.50         | 0.50        | 0.00         | Greenhouse/Vegetable Soil Fertility  |
| <b>TOTALS:</b>               |      | <b>16.11</b> | <b>6.04</b> | <b>10.35</b> |                                      |

## PROJECTS

|            |   |               |
|------------|---|---------------|
| MICL00319  | Classification, Genesis and Evaluation of Michigan Soils  | Mokma, D.     |
| MICL00569  | Breeding and Testing Small Grain Cultivars for Michigan   | Freed, R.     |
| MICL00908  | Fundamental Factors in Cultural and Chemical Weed Control, Weed Competition and Weed Life Cycles          | Renner, K.    |
| MICL01124  | Efficient Use of Plant Nutrients  | Vitosh, M.    |
| MICL01462* | Management of Eroded Soils for Enhancement of Productivity and Environmental Quality                      | Mokma, D.     |
| MICL01471* | Chemistry and Bioavailability of Waste Constituents in Soils  | Jacobs, L.    |
| MICL01538  | Harvestability and Processing Quality of Sugar Beet Roots   | Saunders, J.  |
| MICL01568  | Plant Biotechnology: Molecular Approaches to Improve Environmental Stress Tolerance                       | Thomashow, M. |
| MICL01574  | Movement and Degradation of Organic Contaminants in Soils   | Boyd, S.      |
| MICL01617* | Biological and Ecological Basis for Weed Management Decision Support Systems to Reduce Herbicide Use      | Kells, J.     |
| MICL01654  | Genetic Improvement Of Beans ( <i>Phaseolus vulgaris</i> L.) for Yield, Pest Resistance and Food Value    | Kelly, J.     |
| MICL01685  | Crop Rotation Effects on Soil Microbial Activity, Nutrient Use Efficiency and Productivity                | Harwood, R.   |
| MICL01761  | Weed Management as a Component of Field Crop Production Systems   | Kells, J.     |
| MICL01768  | Management and Production of Grasses, Legumes and Their Mixtures for Sustainable Forage Crops and Pasture | Leep, R.      |
| MICL01772* | Characterizing Nitrogen Mineralization and Availability in Crop Systems to Protect Water Resources        | Jacobs, L.    |
| MICL01779  | The Physiology and Biochemistry of Herbicide Action, Selectivity and Degradation                          | Penner, D.    |
| MICL01780  | Impact Absorption, Traction and Wear Tolerance Investigation on Turf and Soil Surfaces                    | Rogers, J.    |
| MICL01782  | Application of Organic and Other Waste Residuals to Agricultural Soils as a Waste Management Option       | Jacobs, L.    |
| MICL01796  | Soil and Site-Specific Management for Conservation in Agricultural Systems                                | Pierce, F.    |
| MICL01797  | Soil Microbiology and Biochemistry in Agroecosystems  | Paul, E.      |
| MICL01806  | Breeding and Genetics for the Improvement of Potato ( <i>Solanum tuberosum</i> L.)                        | Douches, D.   |
| MICL01807  | Properties of High Sand Content Soils for Turfgrass Uses  | Crum, J.      |
| MICL01821  | Microbial Ecology of Soil and Biodegradation  | Tiedje, J.    |

# Crop and Soil Sciences

(continued)

|           |  |                   |
|-----------|--|-------------------|
| MICL01830 | Wheat Breeding and Genetics  | Ward, R.          |
| MICL01837 | Cultivation and Topdressing Effects on Turf and Soil   | Rieke, P.         |
| MICL01855 | The Role of Mutation in Bacterial Evolution  | Lenski, R.        |
| MICL01858 | Systems of Cropping  | Christenson, D.   |
| MICL01866 | Simulation and Measurement of the Water, Nitrogen and Phosphorus Dynamics in Field Crop Production | Ritchie, J.       |
| MICL01867 | Parsimonious Biometrical Models Applicable in Agriculture and Natural Resources                    | Schabenberger, O. |
| MICL01872 | Nitrogen Loss in Row Crop Agriculture  | Robertson, G.     |
| MICL01884 | Soil Biophysical Mechanisms of Soil Aggregation  | Smucker, A.       |
| MICL03122 | Development and Correlation of Soil Test Procedures With Crop Yields and Plant Nutrient Contents   | Warncke, D.       |
| MICL03260 | Forage Management Studies in Northern Michigan   | Leep, R.          |
| MICL03302 | Management of Organic Soils for Crop Production  | Warncke, D.       |
| MICL03324 | Drought Resistance in Common Bean  | Foster, E.        |
| MICL03359 | Variety Release: Canola and Wheat Management   | Copeland, L.      |
| MICL07620 | Sustainable Agriculture: Management Systems for Integrating Soil, Plants and Animals               | Harwood, R.       |
| MICL07624 | Improved Production and Utilization Technology Through Variety Development                         | Douches, D.       |
| MICL08142 | Organic N Mineralization and Functional Group Abundance in Clover-Amended Soil                     | Anderson, S.      |
| MICL08173 | Evaluation of Sustainability of the Novel Shoot Meristem Transformation System in NC Cereal Crops  | Sticklen, M.      |
| MICL08176 | Role of CBP1 in Cold- and Drought-Regulated Gene Expression  | Thomashow, M.     |
| MICL08190 | Engineering Improved Stress Tolerance in Canola  | Thomashow, M.     |
| MICL08194 | Root and Soil Carbon Contributions to the Stability and Function of Soil Aggregates                | Smucker, A.       |

# Entomology

Phone: 355-4662

Edward J. Grafius,  
Chair

## FACULTY

|                    | RANK | MAES | MSUE | JOINT | AREA OF INTEREST                           |
|--------------------|------|------|------|-------|--|
| Ayers, George S.   | 12   | 0.25 | 0.00 | 0.75  | IPM/ Apiculture                            |
| Bird, George W.    | 12   | 0.20 | 0.65 | 0.15  | Agricultural Nematology                    |
| Bristow, Catherine | 13   | 0.30 | 0.00 | 0.70  | Insect Ecology                             |
| Dong, Ke           | 14   | 0.25 | 0.00 | 0.75  | Insect Toxicology                          |
| Edens, Thomas C.   | 12   | 0.20 | 0.00 | 0.80  | Resource Economics & Policy                |
| Gage, Stuart H.    | 12   | 0.48 | 0.12 | 0.40  | Environmental Sytems/Entomological Surveys |

# Entomology (continued)

|                        | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST                      |
|------------------------|------|-------------|-------------|-------------|---------------------------------------|
| Gut, Larry             | 14   | 0.25        | 0.65        | 0.10        | Tree Fruit Insects                    |
| Landis, Douglas A.     | 13   | 0.66        | 0.14        | 0.20        | Insect Ecology, Biological Control    |
| McCullough, Deborah G. | 13   | 0.30        | 0.50        | 0.20        | Forest Entomology                     |
| Melakerberhan, Haddish | 14   | 0.20        | 0.00        | 0.80        | Plant-Nematode Interaction Physiology |
| Merritt, Richard W.    | 12   | 0.50        | 0.00        | 0.50        | Aquatic Insect Ecology                |
| Miller, James R.       | 12   | 0.24        | 0.00        | 0.76        | Insect Behavior                       |
| Raikhel, Alexander S.  | 12   | 0.30        | 0.00        | 0.70        | Insect Physiology                     |
| Scriber, J. Mark       | 12   | 0.25        | 0.25        | 0.50        | Insect Ecology                        |
| Smitley, David R.      | 13   | 0.25        | 0.60        | 0.15        | Landscape/Ornamental Insect Ecology   |
| Stehr, Frederick W.    | 12   | 0.37        | 0.00        | 0.63        | Insect Biocontrol Systems             |
| Thiem, Suzanne         | 13   | 0.40        | 0.00        | 0.60        | Insect Molecular Biology              |
| Walker, Edward D.      | 13   | 0.33        | 0.33        | 0.34        | Medical/Veterinary Entomology         |
| Zabik, Matthew J.      | 12   | 0.10        | 0.00        | 0.90        | Environmental Toxicology              |
| <b>TOTALS:</b>         |      | <b>5.83</b> | <b>3.24</b> | <b>9.93</b> |                                       |

## PROJECTS

|            |  |                  |
|------------|--|------------------|
| MICL01067* | Climate and Agricultural Landscape Productivity Analysis and Assessment in the North Central Region                      | Gage, S.         |
| MICL01563* | Spatial Dynamics of Leafhopper Pests and Their Management on Alfalfa   | DiFonzo, C.      |
| MICL01584* | Biological and Cultural Management of Plant-Parasitic Nematodes  | Bird, G.         |
| MICL01606  | Biological Control and Integrated Management of Insects in Nurseries, Turf and the Urban Forest                          | Smitley, D.      |
| MICL01640* | Ecology and Management of European Corn Borer and Other Stalk-Boring Lepidoptera   | Landis, D.       |
| MICL01644  | Plant Chemical Defenses: Insect Detoxification and Ecological Factors Affecting Gene Flow and Host Selection/Hybrid Zone |                  |
| MICL01663  | Biology and Management of Insect Pests of Vegetable Crops  | Grafius, E.      |
| MICL01700  | Ecology and Management of Forest Insects in Michigan   | McCullough, D.   |
| MICL01722* | Ecology and Impact of Gypsy Moth Invasion  | Scriber, J.      |
| MICL01733  | Mechanisms of Baculovirus Pathogenesis in Insects  | Thiem, S.        |
| MICL01734  | Diet Choice and Foraging in Ants   | Bristow, C.      |
| MICL01741* | Overwinter Survival of Heterodera, Pratylenchus and Associated Nematodes in the North Central Region                     | Bird, G.         |
| MICL01742  | Molecular Basis of Insect Reproduction   | Raikhel, A.      |
| MICL01745  | The Center for the Study of Insect Diversity   | Stehr, F.        |
| MICL01783  | Influence of Agricultural Landscape Structure on Biological Control of Pests by Insects                                  | Landis, D.       |
| MICL01792  | Physiological Basis for Integrated Approach Towards Sustainable Management of Plant Parasitic Nematodes                  |                  |
| MICL01813* | Genetic Variability in the Cyst and Root-Knot Nematodes  | Melakeberhan, H. |
| MICL01814  | Factors Regulating Insect Host-Plant Colonization  | Miller, J.       |
| MICL01826  | Development of Bee Forage Systems  | Ayers, G.        |
| MICL03338  | Ecology and Management of Arthropod Vector Populations and Vector-Borne Diseases   | Walker, E.       |
| MICL03361  | Biology and Control of Biting Flies in Michigan  | Merritt, R.      |
| MICL07627  | New Technology for Pheromone Mating Disruption in Michigan Orchards  | Isaacs, R.       |
| MICL08189  | Managing Natural and Engineering Resistance in Potato to Colorado Potato Beetle  | Grafius, E.      |
| MICL08192  | Influence of Perennial Habitats Including High-Value Woody Species on Natural Enemies of Crop Pests                      | Landis, D.       |

# Family and Child Ecology

Phone: 355-7680



Marjorie J. Kostelnik,  
Chair

## FACULTY

|                         | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST         |
|-------------------------|------|-------------|-------------|-------------|--------------------------|
| Imig, David R.          | 12   | 0.25        | 0.00        | 0.75        | Family Ecology           |
| Keefe, Dennis R.        | 14   | 0.50        | 0.00        | 0.50        | Family Economics         |
| Keith, Joanne G.        | 12   | 0.10        | 0.80        | 0.10        | Human Development/Family |
| Schiamborg, Lawrence R. | 12   | 0.30        | 0.00        | 0.70        | Human Development/Family |
| Walker, Rosemary A.     | 12   | 0.50        | 0.00        | 0.50        | Family Economics         |
| <b>TOTALS:</b>          |      | <b>1.65</b> | <b>0.80</b> | <b>2.55</b> |                          |

## PROJECTS

|            |  |            |
|------------|--|------------|
| MICL01523* | Family Business: Interaction in Work and Family Spheres  | Walker, R. |
| MICL01786  | Determinants of Small Family Business Outcomes   | Walker, R. |
| MICL01841  | Identification and Evaluation of Internal and External Assets in the Lives of Children and Adolescents | Keith, J.  |
| MICL03349  | The Study of Family Social Capital in Rural Michigan Communities                                       | Imig, D.   |
| MICL03368  | Family-Environment Transactions: Effects on Economic Well-Being and Michigan Families' Life Quality    | Keefe, D.  |

# Fisheries and Wildlife

Phone: 355-4477



William W. Taylor,  
Chair

## FACULTY

|                                | RANK | MAES | MSUE | JOINT | AREA OF INTEREST               |
|--------------------------------|------|------|------|-------|--------------------------------|
| Bence, James R. <sup>6</sup>   | 14   | 0.75 | 0.20 | 0.05  | Fish Population Dynamics       |
| Bremigan, Mary T. <sup>6</sup> | 14   | 0.60 | 0.00 | 0.40  | Fish Management                |
| Campa, Henry III               | 13   | 0.50 | 0.00 | 0.50  | Wildlife Habitat Ecology       |
| Coon, Thomas G.                | 13   | 0.20 | 0.00 | 0.80  | Fish Ecology/Stream Management |
| Garling, Donald L.             | 12   | 0.30 | 0.50 | 0.20  | Aquaculture                    |
| Hayes, Daniel B. <sup>6</sup>  | 14   | 0.75 | 0.20 | 0.05  | Stream Fisheries Biology       |
| Jones, Michael L. <sup>6</sup> | 13   | 0.75 | 0.20 | 0.05  | Fisheries Stream Models        |
| Li, Weimeng <sup>6</sup>       | 14   | 0.75 | 0.20 | 0.05  | Fish Physiology                |
| Liu, Jianguo <sup>6</sup>      | 14   | 0.75 | 0.20 | 0.05  | Wildlife Systems Models        |
| Peyton, R. Benny               | 12   | 0.42 | 0.00 | 0.58  | Human Dimensions               |

# Fisheries and Wildlife

(continued)

|                                      | RANK | MAES         | MSUE         | JOINT        | AREA OF INTEREST   |
|--------------------------------------|------|--------------|--------------|--------------|--------------------|
| Prince, Harold H.                    | 12   | 0.75         | 0.00         | 0.25         | Waterfowl/Wetlands |
| Scribner, Kim T. <sup>6</sup>        | 14   | 0.75         | 0.20         | 0.05         | Molecular Ecology  |
| Soranno, Patricia A.                 | 14   | 0.50         | 0.00         | 0.50         | Limnology          |
| Winterstein, Scott R.                | 13   | 0.50         | 0.00         | 0.50         | Wildlife Biometry  |
| <b>TOTALS:</b>                       |      | <b>8.27</b>  | <b>1.70</b>  | <b>4.03</b>  |                    |
| <i>Adjustment for PERM Positions</i> |      | <i>-5.10</i> | <i>-1.20</i> | <i>-0.70</i> |                    |
| <b>ADJUSTED TOTALS</b>               |      | <b>3.17</b>  | <b>0.50</b>  | <b>3.33</b>  |                    |

## PROJECTS

|           |   |               |
|-----------|---|---------------|
| MICL01540 | Ecology, Population Dynamics and Management of Michigan Great Lakes Fisheries Resources | Taylor, W.    |
| MICL01646 | Wildlife Responses to Habitat Management  | Campa, H.     |
| MICL01719 | Management of Forests and Wildlife for Multiple Use Benefits                            | Campa, H.     |
| MICL01739 | Improving Public Involvement in Agricultural and Natural Resource Issues                | Peyton, R.    |
| MICL01740 | Development of Commercial Fish Culture Techniques                                       | Garling, D.   |
| MICL01758 | Relationship Between Habitat Characteristics and Fish Population Dynamics               | Hayes, D.     |
| MICL01759 | Tools and Information for Holistic Management of Great Lakes' Fisheries                 | Bence, J.     |
| MICL01785 | Systems Modeling of Wildlife Dynamics Across Heterogeneous Landscapes                   | Liu, J.       |
| MICL01868 | The Influence of Landscapes and Biological Communities on Freshwater Ecosystems         | Soranno, P.   |
| MICL01893 | Uncertainty and the Management of Great Lakes Fisheries                                 | Jones, M.     |
| MICL01894 | Intraspecific Chemical Communication of Fish  | Li, W.        |
| MICL10006 | Regional Aquaculture Center   | Batterson, T. |
| MICL10007 | Regional Aquaculture Center   | Batterson, T. |
| MICL10008 | Regional Aquaculture Center   | Batterson, T. |
| MICL10009 | Regional Aquaculture Center   | Batterson, T. |
| MICL10010 | Regional Aquaculture Center   | Batterson, T. |

# Food Science and Human Nutrition

Phone: 355-8474

Mark A. Uebersax,  
Chair

## FACULTY

|                     | RANK | MAES | MSUE | JOINT | AREA OF INTEREST             |
|---------------------|------|------|------|-------|------------------------------|
| Bennink, Maurice R. | 12   | 0.50 | 0.00 | 0.50  | Nutritional Biochemistry     |
| Bond, Jenny T.      | 12   | 0.20 | 0.00 | 0.80  | Prenatal/Postnatal Nutrition |
| Booren, Alden M.    | 12   | 0.15 | 0.75 | 0.10  | Meat/Poultry/Fish            |
| Bourquin, Leslie D. | 14   | 0.25 | 0.75 | 0.00  | Food Safety                  |
| Cash, Jerry N.      | 12   | 0.25 | 0.75 | 0.00  | Fruit/Vegetable Products     |
| Chenoweth, Wanda L. | 12   | 0.25 | 0.00 | 0.75  | Clinical Nutrition           |
| Doumit, Matthew E.  | 14   | 0.25 | 0.00 | 0.75  | Meat Quality                 |
| Fraker, Pamela J.   | 12   | 0.20 | 0.00 | 0.80  | Cellular Immunology          |
| Hoerr, Sharon M.    | 12   | 0.40 | 0.00 | 0.60  | Community Nutrition          |
| Hord, Norman        | 14   | 0.25 | 0.00 | 0.75  | Nutritional Epidemiology     |
| Linz, John E.       | 12   | 0.50 | 0.00 | 0.50  | Food Microbiology            |
| Ng, Perry K. W.     | 13   | 0.50 | 0.00 | 0.50  | Cereal Science               |
| Ofoli, Robert Y.    | 13   | 0.49 | 0.00 | 0.51  | Colloid/Interface Science    |
| Osburn, Wesley N.   | 14   | 0.15 | 0.00 | 0.85  | Meat/Poultry Production      |

# Food Science and Human Nutrition

(continued)

|                       | RANK | MAES         | MSUE        | JOINT        | AREA OF INTEREST                           |
|-----------------------|------|--------------|-------------|--------------|--|
| Pestka, James J.      | 12   | 0.62         | 0.00        | 0.38         | Food Microbiology                          |
| Price, James F.       | 12   | 0.54         | 0.00        | 0.46         | Meat/Poultry Products                      |
| Romsos, Dale R        | 12   | 0.50         | 0.00        | 0.50         | Lipid Metabolism                           |
| Ryser, Elliott T.     | 14   | 0.53         | 0.00        | 0.47         | Dairy Foods                                |
| Schemmel, Rachelle A. | 12   | 0.30         | 0.00        | 0.70         | Clinical Nutrition                         |
| Schroeder, Joseph J.  | 14   | 0.50         | 0.00        | 0.50         | Nutritional Biochemistry; Bioactive Lipids |
| Smith, Denise M.      | 12   | 0.67         | 0.00        | 0.33         | Poultry/Egg Products                       |
| Song, Won O.          | 12   | 0.40         | 0.00        | 0.60         | Nutritional Assessment                     |
| Steffe, James F.      | 12   | 0.25         | 0.00        | 0.75         | Food Engineering/Rheology                  |
| Strasburg, Gale M.    | 13   | 0.65         | 0.00        | 0.35         | Muscle Biochemistry                        |
| Ustunol, Zeynep       | 13   | 0.72         | 0.00        | 0.28         | Dairy Foods                                |
| Zabik, Mary E.        | 12   | 0.19         | 0.00        | 0.81         | Foods                                      |
| Zile, Maija H.        | 12   | 0.50         | 0.00        | 0.50         | Nutrition                                  |
| <b>TOTALS:</b>        |      | <b>10.71</b> | <b>2.25</b> | <b>14.04</b> |  |

## PROJECTS

|            |  |               |
|------------|--|---------------|
| MICL01209  | Quality and Safety of Fresh and Processed Meat Products  | Price, J.     |
| MICL01323  | Improving Process Efficiency, Product Quality and Nutrient Composition of Fruit and Vegetable Products | Uebersax, M.  |
| MICL01413  | Metabolism and Function of Vitamin A   | Zile, M.      |
| MICL01419  | Processing Treatments Influencing Functional Properties and Utilization of Muscle Foods                | Booren, A.    |
| MICL01444* | Role of N-3/N-6 Polyunsaturated Fatty Acids in Health Maintenance                                      | Romsos, D.    |
| MICL01448  | Microbial Food-Borne Disease   | Pestka, J.    |
| MICL01478* | Genetic Improvement of Beans ( <i>Phaseolus vulgaris</i> L.) for Yield, Pest Resistance and Food Value | Uebersax, M.  |
| MICL01532* | Functional Properties of Food Proteins   | Smith, D.     |
| MICL01599  | Regulation of Calcium in Muscle Sarcoplasm   | Strasburg, G. |
| MICL01623  | Comparative Aspects of Nutrition and Lipid Metabolism  | Romsos, D.    |
| MICL01632  | Improving the Quality and Safety of Value-Added Meat and Poultry Products                              | Smith, D.     |
| MICL01664  | Development, Quality and Safety of Value-Added Dairy and Dairy-Based Products                          | Ustunol, Z.   |
| MICL01665  | Nutritional Assessment in Population-Based Epidemiological Studies                                     | Song, W.      |
| MICL01694* | Nutrient Bioavailability: A Key To Human Nutrition   | Chenoweth, W. |
| MICL01699  | Molecular Structure of Soft Wheat Proteins in Relation to End-Use Quality                              | Ng, P.        |
| MICL01706  | Interactions of Biological Macromolecules at the Liquid-Liquid Interface                               | Ofoli, R.     |
| MICL01715* | Improve Food Safety Through Discovery and Control of Natural and Induced Toxicants and Antitoxicants   | Pestka, J.    |
| MICL01762  | Relationship of Diet and Cancer  | Benink, M.    |
| MICL01764  | Quality and Safety of Processed Foods  | Gray, J.      |
| MICL01791  | Processing and Quality Evaluation of Fruits and Vegetables   | Cash, J.      |
| MICL01795  | Modulation of Colon and Breast Cancer Cell Growth by Sphingolipids                                     | Schroeder, J. |
| MICL01804* | Using Stages of Change Model to Promote Consumption of Grains, Vegetables and Fruits by Young Adults   | Hoerr, S.     |
| MICL01856  | Aflatoxin B1 Biosynthesis in <i>Aspergillus</i>  | Linz, J.      |
| MICL01878  | Reducing Dietary Risk for Chronic Disease Via a Behavioral Approach in High Risk Populations           | Hoerr, S.     |
| MICL01887* | Enhancing Food Safety Through Control of Food-Borne Disease Agents                                     | Linz, J.      |
| MICL01895  | Influence of Diet and Phytochemicals on Colon Carcinogenesis   | Bourquin, L.  |

# Food Science and Human Nutrition (continued)

|           |   |               |
|-----------|---|---------------|
| MICL03363 | Food Industry Institute   | Hegarty, P.   |
| MICL03370 | Food Safety Issues for Michigan Consumers   | Zabik, M.     |
| MICL03371 | Targeting Michigan Groups at Nutritional/Health Risk: Identifying Needs, Intervention Strategies and Outcomes | Bond, J.      |
| MICL06885 | Apoptosis and Sphingolipids in Fumonisin-Induced Kidney Cell Death  | Schroeder, J. |
| MICL08144 | Effects of Lactic Cultures on Gastrointestinal Immune Function  | Pestka, J.    |
| MICL08181 | ELISA to Determine Adequacy of Cooking to USDA Beef Time/Temperature Schedules                                | Smith, D.     |
| MICL08191 | Metabolism and Function of Retinoic Acid in Quail Embryogenesis   | Zile, M.      |
| MICL08195 | Biochemical Characterization of Pale, Soft, Exudative Turkey  | Strasburg, G. |
| MICL08196 | Recombinant Antibodies for Natural Toxicants  | Pestka, J.    |

# Forestry

Phone: 355-0091



Daniel E. Keathley,  
Chair

## FACULTY

|                                      | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST  |
|--------------------------------------|------|-------------|-------------|-------------|-------------------|
| Dickmann, Donald I.                  | 12   | 0.70        | 0.00        | 0.30        | Fire Ecology      |
| Epperson, Bryan K.                   | 13   | 0.70        | 0.00        | 0.30        | Forest Genetics   |
| Fried, Jeremy S.                     | 13   | 0.60        | 0.00        | 0.40        | Forest Management |
| Hart, James B., Jr.                  | 13   | 0.50        | 0.00        | 0.50        | Forest Soils      |
| Kamdem, Donatiens-Pascal             | 13   | 0.70        | 0.00        | 0.30        | Wood Science      |
| Kielbasa, Julian J.                  | 12   | 0.15        | 0.25        | 0.60        | Urban Forestry    |
| Kobe, Richard K.                     | 14   | 0.70        | 0.00        | 0.30        | Forest Ecology    |
| Lantagne, Douglas O.                 | 13   | 0.20        | 0.80        | 0.00        | Silviculture      |
| Leefers, Larry A.                    | 13   | 0.50        | 0.00        | 0.50        | Forest Economics  |
| McDonough, Maureen H.                | 12   | 0.15        | 0.50        | 0.35        | Forest Sociology  |
| Potter-Witter, Karen L.              | 13   | 0.55        | 0.35        | 0.10        | Forest Economics  |
| Ramm, Carl W.                        | 13   | 0.60        | 0.00        | 0.40        | Forest Biometrics |
| Walters, Michael B. <sup>6</sup>     | 14   | 0.75        | 0.20        | 0.05        | Forest Ecology    |
| <b>TOTALS:</b>                       |      | <b>6.80</b> | <b>2.10</b> | <b>4.10</b> |                   |
| <i>Adjustment for PERM Positions</i> |      | -0.75       | -0.20       | -0.05       |                   |
| <b>ADJUSTED TOTALS</b>               |      | <b>6.05</b> | <b>1.90</b> | <b>4.05</b> |                   |

## PROJECTS

|            |   |                   |
|------------|---|-------------------|
| MICL01148  | Evaluation of Natural Control for Gypsy Moth in Southern Michigan   | Ramm, C.          |
| MICL01432  | Attitudes Toward Natural Resources and the Environment in the 1990s: A Representative Approach              | McDonough, M.     |
| MICL01693* | The National Atmospheric Deposition Program (NADP)  | Kobe, R.          |
| MICL01748  | Economic Evaluation of Forest Management Opportunities: Supply/Demand Modeling of Michigan Stumpage Markets | Potter-Witter, K. |
| MICL01749  | Assessment of Effects of Prescribed Burning on Fine Roots in a Mature Red Pine Stand                        | Dickmann, D.      |
| MICL01750  | Production and Trade Flow of Michigan Forest Products   | Stevens, J.       |
| MICL01755  | Incorporating GIS into Bio-Social Analysis for Ecosystem Management   | Fried, J.         |
| MICL01773  | Testing Lake States TWIGS: Five and Ten Year Growth Projections for Upland Hardwoods                        | Ramm, C.          |
| MICL01774  | Managing the Genetic Diversity of Michigan Pines  | Epperson, B.      |

## Forestry

(continued)

|           |  |               |
|-----------|--|---------------|
| MICL01805 | Bioremediation of Condensate Produced During Conditioning of Veneer Logs                     | Kamdem, D.    |
| MICL01811 | Incorporating Risk, Natural Resources Accounting and Hedonic Valuation in Forestry Decisions | Leefers, L.   |
| MICL01812 | Municipal Tree Management  | Kielbaso, J.  |
| MICL01845 | Long-Term Diameter, Basal Area and Ordered Categorical Responses of Oak and Hardwood Forests | Hart, J.      |
| MICL01869 | Forest Management for the Regeneration of Hardwoods and Conifers                             | Lantagne, D.  |
| MICL01871 | Modeling Landscape-Level Variation in Forest Community Dynamics                              | Kobe, R.      |
| MICL07607 | Advanced Technology Application to Eastern Hardwood Utilization                              | Suchsland, O. |
| MICL07609 | Advanced Technology Application to Eastern Hardwood Utilization                              | Suchsland, O. |
| MICL07615 | Advanced Technology Applications to Eastern Hardwood Utilization                             | Kamdem, D.    |
| MICL07623 | Advanced Technology Applications to Eastern Hardwood Utilization                             | Kamdem, D.    |
| MICL07631 | Advanced Technology Applications to Eastern Hardwood Utilization                             | Kamdem, D.    |

## Geography

Phone: 355-4649

## PROJECTS

|           |  |
|-----------|--|
| MICL03373 | Impacts of Weather and Climate on Michigan Agriculture |
|-----------|--|

Andresen, J.



## Horticulture

Phone: 355-5191

Wayne H. Loescher,  
Chair

## FACULTY

|                      | RANK | MAES | MSUE | JOINT | AREA OF INTEREST                        |
|----------------------|------|------|------|-------|---|
| Beaudry, Randolph M. | 13   | 0.50 | 0.50 | 0.00  | Postharvest Fruit Physiology            |
| Behe, Bridget K.     | 13   | 0.25 | 0.00 | 0.75  | Horticulture Marketing                  |
| Biernbaum, John A.   | 12   | 0.20 | 0.00 | 0.80  | Plant Physiology/Floriculture           |
| Cameron, Arthur C.   | 12   | 0.70 | 0.00 | 0.30  | Plant Physiology/Landscape Horticulture |
| Carlson, William H.  | 12   | 0.35 | 0.50 | 0.15  | Floriculture/Physiology & Bedding       |
| Dilley, David R.     | 12   | 0.80 | 0.00 | 0.20  | Postharvest Physiology/Pomology         |

|                        |    |              |             |             |  |
|------------------------|----|--------------|-------------|-------------|--|
| Flore, James A.        | 12 | 0.65         | 0.00        | 0.35        | Plant Physiology/Pomology                |
| Grumet, Rebecca        | 13 | 0.90         | 0.00        | 0.10        | Vegetable Breeding/Genetics              |
| Hancock, James F.      | 12 | 0.90         | 0.00        | 0.10        | Small Fruit Breeding/Genetics            |
| Hanson, Eric J.        | 12 | 0.35         | 0.65        | 0.00        | Pomology Small Fruits                    |
| Heins, Royal D.        | 12 | 0.75         | 0.00        | 0.25        | Plant Physiology/Floriculture            |
| Herner, Robert C.      | 12 | 0.35         | 0.00        | 0.65        | Postharvest Physiology/Vegetable Crop    |
| Howell, Gordon S.      | 12 | 0.80         | 0.00        | 0.20        | Plant Physiology/Viticulture/Enology     |
| Iezzoni, Amy F.        | 12 | 0.80         | 0.00        | 0.20        | Fruit Breeding/Genetics                  |
| Kelly, John F.         | 12 | 0.66         | 0.11        | 0.23        | Vegetable Composition                    |
| Lownds, Norman K.      | 14 | 0.25         | 0.00        | 0.75        | Landscape Horticulture/Stress Physiology |
| Nair, Muraleedharan G. | 12 | 0.90         | 0.00        | 0.10        | Natural Products/Chemistry               |
| Perry, Ronald L.       | 12 | 0.50         | 0.50        | 0.00        | Pomology/Rootstocks                      |
| Rowe, D. Bradley       | 14 | 0.25         | 0.00        | 0.75        | Landscape Horticulture                   |
| Schutzki, Robert E.    | 13 | 0.10         | 0.00        | 0.90        | Landscape Horticulture                   |
| Sink, Kenneth C.       | 12 | 0.75         | 0.00        | 0.25        | Genetics/Plant Breeding                  |
| van Nocker, Steven R.  | 14 | 0.75         | 0.00        | 0.25        | Reproductive Development/Genetics        |
| Widders, Irvin E.      | 12 | 0.67         | 0.00        | 0.33        | Vegetable Physiology                     |
| Zabadal, Thomas J.     | 13 | 0.50         | 0.50        | 0.00        | Viticulture                              |
| Zandstra, Bernard H.   | 12 | 0.25         | 0.75        | 0.00        | Vegetable Crops                          |
| <b>TOTALS:</b>         |    | <b>13.88</b> | <b>3.51</b> | <b>7.61</b> |  |

PROJECTS

|            |  |               |
|------------|--|---------------|
| MICL01155* | Postharvest Physiology of Fruits   | Dilley, D.    |
| MICL01222* | Plant Germ Plasm and Information Management and Utilization  | Iezzoni, A.   |
| MICL01272  | Physiology of Carbon Balance in Fruit Crops: Abiotic and Biotic Thresholds   | Flore, J.     |
| MICL01305* | Rootstock and Interstem Effects on Pome and Stone Fruit Trees  | Perry, R.     |
| MICL01325  | Weed Control in Vegetable Crop Management Systems  | Zandstra, B.  |
| MICL01428  | Sour Cherry and Peach Breeding and Genetics  | Iezzoni, A.   |
| MICL01461* | Freeze Damage and Protection of Fruit and Nut Crops  | Howell, G.    |
| MICL01468  | Role of Ion Flux and Compartmentation in the Transduction of Environmentally Elicited Signals                                  | Widders, I.   |
| MICL01517  | Optimization of the Root Zone Environment in Greenhouse Crop Production  | Biernbaum, J. |
| MICL01607  | Physiological Adaptation and Cultural Manipulation of Plant Systems  | Schutzki, R.  |
| MICL01680  | Biologically Active Natural Products and Value-Added Products From Plants and Microbes for Agricultural and Pharmaceutical Use | Nair, M.      |
| MICL01684  | Modified Atmosphere Packaging of Horticultural Produce   | Cameron, A.   |
| MICL01697* | Decision Support for Design and Control of Plant Growth Systems  | Heins, R.     |
| MICL01731  | Breeding and Genetic Studies for Selected Horticultural Crops  | Sink, K.      |
| MICL01743  | Chemical Regulation of Plant Growth, Quality and Yield   | Ries, S.      |
| MICL01753  | Application of Molecular Genetic Approaches to Vegetable Crop Improvement  | Grumet, R.    |
| MICL01778  | Environmental and Physiological Variables Effect on Growth, Quality, and Marketability of Garden Crop                          | Carlson, W.   |
| MICL01810  | Genetic Improvement of Strawberries and Blueberries  | Hancock, J.   |
| MICL01824  | Physiological and Environmental Factors Influencing Growth and Development of Flower Crops                                     | Heins, R.     |
| MICL01839  | Efficient Use of Fertilizers in Fruit Production   | Hanson, E.    |
| MICL01846  | Tomato Ripening Mutants  | Herner, R.    |
| MICL01848  | Enhancement of Control Over Quality Loss in Horticultural Commodities Following Harvest  | Beaudry, R.   |
| MICL03218  | Vine Culture and Physiology for Best Yield, Fruit Quality and Adaptation to Environmental Stresses                             | Howell, G.    |

## Horticulture (continued)

|           |  |              |
|-----------|--|--------------|
| MICL03305 | Viticultural Practices for Mechanical Pruning and Crop Control of Concord and Niagara Grapevines | Zabadal, T.  |
| MICL07622 | Safeguarding the Supply of Specialty Crops for Consumers   | Flore, J.    |
| MICL08125 | Effect of Salinity Stress on Regulation of Mannitol Metabolism                                   | Loescher, W. |
| MICL08187 | CO <sub>2</sub> Role in Reaction Mechanism of ACC Oxidase in Ethylene Biosynthesis               | Dilley, D.   |
| MICL08202 | Relationship Between Genetic and Hormonal Control of Sex Expression in Cucumis Species           | Grumet, R.   |

## Human Environment and Design

Phone: 355-7712



Dana G. Stewart, Chair

### FACULTY

|                       | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST          |
|-----------------------|------|-------------|-------------|-------------|---------------------------|
| Pysarchik, Dawn I.    | 13   | 0.31        | 0.00        | 0.69        | Merchandising Management  |
| Slocum, Ann C.        | 13   | 0.25        | 0.00        | 0.75        | Apparel Design & Textiles |
| Sontag, M. Suzanne    | 12   | 0.25        | 0.00        | 0.75        | Apparel Design & Textiles |
| Sternquist, Brenda J. | 12   | 0.25        | 0.00        | 0.75        | Merchandising Management  |
| <b>TOTALS:</b>        |      | <b>1.06</b> | <b>0.00</b> | <b>2.94</b> |                           |

### PROJECTS

|            |  |                |
|------------|--|----------------|
| MICL01442* | Occupational Safety and Health Through the Use of Protective Clothing                                | Slocum, A.     |
| MICL01775  | Processed Foods in India: Consumer Demand and Distribution Systems                                   | Pysarchik, D.  |
| MICL01833  | Emerging Free Markets: The Role of Federal vs. Municipal Approved Retail Joint Ventures              | Sternquist, B. |
| MICL03357  | Needs of the Michigan Textile/Apparel Industry: Characterization, Assessment and Response Strategies | Sontag, M.     |
| MICL08209  | The Food Retailing Industry In People's Republic of China: A Comparison of Behavioral Relationships  | Sternquist, B. |

## Kellogg Biological Station

Phone: 616-671-5117



Michael J. Klug, Director

### FACULTY

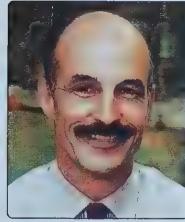
|                | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST |
|----------------|------|-------------|-------------|-------------|------------------|
| Bush, Guy L.   | 12   | 0.10        | 0.00        | 0.90        | Genetics         |
| <b>TOTALS:</b> |      | <b>0.10</b> | <b>0.00</b> | <b>0.90</b> |                  |

### PROJECTS

|           |   |               |
|-----------|---|---------------|
| MICL08188 | Closing Global Nitrous Oxide Cycle: Mechanistic Understanding Flux Partitioning Agricultural Landscapes | Robertson, G. |
|-----------|---|---------------|

# Large Animal Clinical Sciences

Phone: 355-9593



Frederik J. Derksen,  
Chair

## FACULTY

|                         | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST                      |
|-------------------------|------|-------------|-------------|-------------|---------------------------------------|
| Baker, John C.          | 12   | 0.20        | 0.00        | 0.80        | Bovine Respiratory Diseases           |
| Erskine, Ronald J.      | 13   | 0.25        | 0.33        | 0.42        | Dairy Cattle Mastitis                 |
| Gomez-Duran, Charles O. | 14   | 0.50        | 0.30        | 0.20        | Swine Veterinary Medicine             |
| Grooms, Daniel L.       | 14   | 0.50        | 0.50        | 0.00        | Beef Disease Management               |
| Herdt, Thomas H.        | 12   | 0.25        | 0.00        | 0.75        | Cattle Nutrition & Metabolic Diseases |
| Holland, Robert E.      | 13   | 0.34        | 0.00        | 0.66        | Bovine Enteric Disease                |
| Kaneene, John B.        | 12   | 0.14        | 0.00        | 0.86        | Epidemiology/Disease Impact           |
| Robinson, Norman E.     | 12   | 0.25        | 0.00        | 0.75        | Respiratory Physiology                |
| Rook, Joseph S.         | 12   | 0.40        | 0.40        | 0.20        | Small Ruminant Animals                |
| Sears, Phillip M.       | 12   | 0.35        | 0.35        | 0.30        | Dairy Disease Management              |
| Straw, Barbara E.       | 12   | 0.28        | 0.50        | 0.22        | Swine Veterinary Medicine             |
| <b>TOTALS:</b>          |      | <b>3.46</b> | <b>2.38</b> | <b>5.16</b> |                                       |

## PROJECTS

|            |  |               |
|------------|--|---------------|
| MICL01417* | Bovine Respiratory Disease: Risk Factors, Pathogens, Diagnosis and Management                      | Baker, J.     |
| MICL01688* | Mastitis Resistance to Enhance Dairy Food Safety   | Erskine, R.   |
| MICL01708  | Pre-Harvest Food Safety in Dairy Cattle: Reducing Risks Related to Mastitis                        | Erskine, R.   |
| MICL01801  | Total Quality Management for Disease Control on Swine Farms  | Straw, B.     |
| MICL01819  | Nutritional Assessment of Animals and Animal Populations by Laboratory Means                       | Herdt, T.     |
| MICL01820  | Assessment and Control of Enteric Pathogens Among Neonatal Calves                                  | Holland, R.   |
| MICL03354  | Implementing Food Safety Through Total Quality Management on Michigan Dairy Farms                  | Sears, P.     |
| MICL03355  | Perinatal Lamb Mortality and Production Issues Associated With Pasture Lambing Systems in Michigan | Rook, J.      |
| MICL06878  | Persistent Infection With Bovine Viral Diarrhea Virus (BVDV): Diagnosis, Epidemiology and Control  | Baker, J.     |
| MICL06879  | Is the Dairy Quality Assurance Program Effective in Reducing Drug Residues in Milk?                | Kaneene, J.   |
| MICL06881  | Testing of a New Tool to Quantitate Cytokine Gene Expression in Swine                              | Mansfield, L. |
| MICL06886  | Mucus Secretion in Horse Airways   | Robinson, N.  |
| MICL06887  | Characterization of a Novel Equine Cartilage Matrix Metalloprotease                                | Caron, J.     |
| MICL07610  | Minor Use Animal Drug Program: North Central Region  | Holland, R.   |
| MICL07630  | Minor Use Animal Drug Program: North Central Region  | Holland, R.   |



# Microbiology

Phone: 355-6463



Jerry B. Dodgson, Chair

| FACULTY               | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST                     |
|-----------------------|------|-------------|-------------|-------------|--------------------------------------|
| Bagdasarian, Michael  | 12   | 0.39        | 0.00        | 0.61        | Molecular Biology                    |
| Breznak, John A.      | 12   | 0.30        | 0.00        | 0.70        | Microbial Ecology                    |
| Champness, Wendy C.   | 13   | 0.50        | 0.00        | 0.50        | Microbial Genetics                   |
| Dazzo, Frank B.       | 12   | 0.80        | 0.00        | 0.20        | Microbial Ecology                    |
| de Bruijn, Frans J.   | 12   | 0.38        | 0.00        | 0.62        | Molecular Biology                    |
| Hausinger, Robert P.  | 12   | 0.40        | 0.00        | 0.60        | Microbial Physiology                 |
| Klug, Michael J.      | 12   | 0.25        | 0.00        | 0.75        | Microbial Ecology                    |
| Maes, Roger K.        | 12   | 0.03        | 0.00        | 0.97        | Virology                             |
| Reddy, C. Adinarayana | 12   | 0.46        | 0.00        | 0.54        | Microbial Physiology/Ecology         |
| Schmidt, Thomas M.    | 14   | 0.40        | 0.00        | 0.60        | Microbial Ecology                    |
| Thomashow, Michael F. | 12   | 0.14        | 0.00        | 0.86        | Plant & Microbial Molecular Genetics |
| Tiedje, James M.      | 12   | 0.15        | 0.00        | 0.85        | Soil Microbiology                    |
| Velicer, Leland F.    | 12   | 0.30        | 0.00        | 0.70        | Virology                             |
| <b>TOTALS:</b>        |      | <b>4.50</b> | <b>0.00</b> | <b>8.50</b> |                                      |

PROJECTS

|            |   |                 |
|------------|---|-----------------|
| MICL01154* | Enteric Diseases of Swine and Cattle: Prevention, Control and Food Safety                           | Maes, R.        |
| MICL01314  | Symbiotic Infection of Legume Roots by Nitrogen-Fixing Rhizobium                                    | Dazzo, F.       |
| MICL01557  | Molecular Genetic Regulation of Streptomyces Antibiotics  | Champness, W.   |
| MICL01593* | Advanced Technologies for the Genetic Improvement of Poultry  | Dodgson, J.     |
| MICL01628  | Analysis of the Genes of Marek's Disease Herpesvirus and the Proteins They Encode                   | Velicer, L.     |
| MICL01629  | Lignin Degradation by Basidiomycete Fungi and Applications  | Reddy, C.       |
| MICL01681  | Molecular Basis of Symbiotic Plant-Microbe Interactions   | de Bruijn, F.   |
| MICL01728* | National Animal Genome Research Project   | Dodgson, J.     |
| MICL01757  | Analysis of Ribosomal RNA Genes and Operons in Microbial Ecology and Evolution                      | Schmidt, T.     |
| MICL01771  | Spatial and Temporal Patterns of C, N and Soil Microbial Communities in Agricultural Soils          | Klug, M.        |
| MICL01834  | Molecular Mechanisms Involved in the Secretion of Pathogenicity Factors Through Bacterial Membranes | Bagdasarian, M. |
| MICL01857  | Physiology and Phylogenetic Diversity of Termite Gut Symbionts                                      | Breznak, J.     |
| MICL08161  | The Regulation of Herbicide Degrading Operons in Soil Bacteria                                      | Wright, A.      |
| MICL08163  | Bioproduction of Carveol and Perillyl Alcohol From Limonene   | Oriel, P.       |
| MICL08165  | Urease Structures, Mechanism, and Inhibition  | Hausinger, R.   |
| MICL08170  | Development of Enterotoxin B Subunit as Carrier of Foreign Antigenic Epitopes                       | Bagdasarian, M. |
| MICL08175  | <i>In vivo</i> Expressed Genes of <i>Actinobacillus pleuropneumoniae</i>                            | Mulks, M.       |
| MICL08182  | Cloning of an Alternative Oxidase Regulatory Gene From <i>Neurospora</i>                            | Bertrand, H.    |
| MICL08183  | Fluorescent Protein Time-Temperature Integrator for Thermal Process Monitoring                      | Merrill, J.     |
| MICL08199  | Chicken Genome Mapping Using AFLP and Anchor STS Markers  | Dodgson, J.     |

# MSU Extension

Phone: 355-2308

**PROJECTS**

MICL07628 Management of the North Central Regional Pesticide Impact Assessment Program (NCPiap) for FY98 Olsen, L.  
 MICL09007 Overseas Technical Cooperation Impact Study: Evaluation of Impact of Overseas Assignments Andrews, M.

## National Food Safety and Toxicology Center

Phone: 432-3100



Robert M. Hollingworth,  
Director

**FACULTY**

|                         | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST               |
|-------------------------|------|-------------|-------------|-------------|--------------------------------|
| Giesy, John P.          | 12   | 0.25        | 0.00        | 0.75        | Aquatic Toxicology             |
| Zabik, Matthew J.       | 12   | 0.84        | 0.00        | 0.16        | Chemical Fate/Residue Analysis |
| Zacharewski, Timothy R. | 14   | 0.20        | 0.00        | 0.80        | Biochemical Toxicology         |
| <b>TOTALS:</b>          |      | <b>1.29</b> | <b>0.00</b> | <b>1.71</b> |                                |

**PROJECTS**

MICL01730\* A National Agricultural Program to Clear Pest Control Agents for Minor Uses Hollingworth, R.  
 MICL01849 Environmental Dynamics of Xenobiotics in the Environment and Analytical Methods Development Zabik, M.  
 MICL03364 Improved Microbial Food Safety Through Risk Assessment, Management, Communication and Analysis Mather, E.  
 MICL03367 Microbial and Chemical Safety of the U.S. Food Supply Hollingworth, R.  
 MICL07613 NC Region IR-4 Leader Lab Program to Clear Pest Control Agents for Minor Uses Hollingworth, R.  
 MICL07629 Minor Use Animal Drug Program: Headquarters Hollingworth, R.

## Packaging

Phone: 355-9580



Bruce R. Harte, Director

**FACULTY**

|                     | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST   |
|---------------------|------|-------------|-------------|-------------|--|
| Clarke, Robert      | 14   | 0.50        | 0.00        | 0.50        | Manufacturing Operations   |
| Downes, Theron W.   | 12   | 0.20        | 0.00        | 0.80        | Packaged Food Quality  |
| Giacin, Jack R.     | 12   | 0.59        | 0.00        | 0.41        | Package Product Interaction  |
| Hernandez, Ruben J. | 13   | 0.25        | 0.00        | 0.75        | Package Product Interaction  |
| Lee, Julian J. L.   | 13   | 0.20        | 0.00        | 0.80        | CAP/MAP & Protective Packaging   |
| Singh, Sher Paul    | 13   | 0.20        | 0.00        | 0.80        | Distribution/Transportation/Environmental Measuring/Packaging Dynamics |
| <b>TOTALS:</b>      |      | <b>1.94</b> | <b>0.00</b> | <b>4.06</b> |  |

**PROJECTS**

MICL01520 Transport Properties of Polymer Films as Related to Quality and Storage Stability of Packaged Products Giacin, J.  
 MICL01735 Effect of Packaging on Reducing Physical Damage to Fresh Produce Due to Transport Vibration Singh, S.

# Packaging

(continued)

|           |  |               |
|-----------|--|---------------|
| MICL01736 | Quality Retention in Packaged Food   | Downes, T.    |
| MICL01828 | Improving the Quality of Products and Distribution Productivity Through Packaging Innovation | Twede, D.     |
| MICL01831 | Design of Plastic Packages for Preserving the Quality and Safety of Food Products            | Hernandez, R. |
| MICL01840 | Controlled Atmosphere and Modified Atmosphere Packaging of Fresh Produce                     | Lee, J.       |

# Park, Recreation and Tourism Resources

Phone: 353-5190



Joseph D. Fridgen, Chair

## FACULTY

|                       | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST                           |
|-----------------------|------|-------------|-------------|-------------|--|
| Holecek, Donald F.    | 12   | 0.75        | 0.25        | 0.00        | Resource Economics/Tourism                 |
| Nelson, Charles M.    | 13   | 0.25        | 0.00        | 0.75        | Natural Resource Management                |
| Propst, Dennis B.     | 13   | 0.50        | 0.00        | 0.50        | Psychology/Planning/Economics              |
| Stynes, Daniel J.     | 12   | 0.50        | 0.00        | 0.50        | System Analysis/Research Methods/Economics |
| Vander Stoep, Gail A. | 13   | 0.25        | 0.25        | 0.50        | Communications/Human Dimensions            |
| <b>TOTALS:</b>        |      | <b>2.25</b> | <b>0.50</b> | <b>2.25</b> |  |

## PROJECTS

|           |   |                  |
|-----------|---|------------------|
| MICL01763 | Influences of Natural Resource Recreation on Land Management in Michigan    | Nelson, C.       |
| MICL01766 | Social Science and Communications in Outdoor Recreation Resource Management | Vander Stoep, G. |
| MICL03280 | Travel, Tourism and Recreation Resource Center                              | Holecek, D.      |
| MICL03362 | Economic Impacts of Recreational Tourism                                    | Stynes, D.       |

# Pathology

Phone: 353-9160



Willie M. Reed, Interim Chair

## FACULTY

|                    | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST                                |
|--------------------|------|-------------|-------------|-------------|---|
| Bell, Thomas G.    | 12   | 0.25        | 0.00        | 0.75        | Comparative Pathology/Platelet Function         |
| Harkema, Jack      | 12   | 0.31        | 0.00        | 0.69        | Toxicology                                      |
| Holland, Margo S.  | 14   | 0.30        | 0.00        | 0.70        | Molecular Pathology                             |
| Padgett, George A. | 12   | 0.25        | 0.00        | 0.75        | Comparative Veterinary Pathology                |
| Patterson, Jon S.  | 13   | 0.25        | 0.00        | 0.75        | Veterinary Pathology/Infectious Disease/Animals |
| <b>TOTALS:</b>     |      | <b>1.36</b> | <b>0.00</b> | <b>3.64</b> |   |

## PROJECTS

|           |   |               |
|-----------|---|---------------|
| MICL01720 | Immunohistochemical Diagnosis of Infectious Diseases  | Patterson, J. |
| MICL01776 | Effects of Endotoxin and Other Organic Dust Constituents on Airway Mucous Cells               | Harkema, J.   |
| MICL01847 | Osteochondrosis: Development of Procedures to Control or Mitigate the Effects of This Disease | Padgett, G.   |
| MICL01882 | Molecular Aspects of Marek's Disease Virus Oncogenicity                                       | Holland, M.   |
| MICL06882 | Hemorrhagic Disorder in Noncytopathic Type II Bovine Virus Diarrhea Viral Infection           | Bell, T.      |

# Pesticide Research Center

Phone: 353-9430



Mark E. Whalon, Acting Director

## FACULTY

|                       | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST                                      |
|-----------------------|------|-------------|-------------|-------------|---|
| DiFonzo, Christina D. | 14   | 0.10        | 0.40        | 0.50        | Field Crop Entomology/Pesticide Education Coordinator |
| Edson, Charles E.     | 13   | 0.25        | 0.75        | 0.00        | Acting IPM Coordinator                                |
| <b>TOTALS:</b>        |      | <b>0.35</b> | <b>1.15</b> | <b>0.50</b> |   |

## PROJECTS

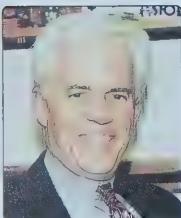
|           |  |                  |
|-----------|--|------------------|
| MICL03365 | Biology and Management of Insects in Michigan Field Crops  | DiFonzo, C.      |
| MICL07604 | Minor Use Animal Drug Program — Headquarters   | Hollingworth, R. |
| MICL07616 | An Integrated Crop Management System to Reduce Pesticide Use in Asparagus Production                     | Edson, C.        |
| MICL07617 | Michigan's CSREES NAPIAP Program — 1997  | Olsen, L.        |
| MICL08155 | Orchard Floor Management Systems to Reduce Herbicide Use in Deciduous Tree Fruit Production in NC Region | Edson, C.        |

# Physiology

Phone: 355-6475



Photo by Bob Neumann



William S. Spielman,  
Chair

## FACULTY

|                     | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST        |
|---------------------|------|-------------|-------------|-------------|-------------------------|
| Dukelow, W. Richard | 12   | 0.40        | 0.00        | 0.60        | Reproductive Physiology |
| Jump, Donald B.     | 12   | 0.50        | 0.00        | 0.50        | Molecular Endocrinology |
| <b>TOTALS:</b>      |      | <b>0.90</b> | <b>0.00</b> | <b>1.10</b> |                         |

## PROJECTS

MICL08205 Dietary Fat Regulation of Hepatic Glycolytic Gene Expression

Jump, D.

# Plant Research Lab (MSU-DOE)

Phone: 353-2270



Kenneth Keegstra,  
Director

## FACULTY

|                     | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST     |
|---------------------|------|-------------|-------------|-------------|----------------------|
| de Bruijn, Frans J. | 12   | 0.38        | 0.00        | 0.62        | Molecular Biology    |
| Howe, Gregg A.      | 14   | 0.23        | 0.00        | 0.77        | Plant/Insect Defense |
| Walton, Jonathan D. | 12   | 0.23        | 0.00        | 0.77        | Plant Pathology      |
| <b>TOTALS:</b>      |      | <b>0.84</b> | <b>0.00</b> | <b>2.16</b> |                      |

## PROJECTS

|           |  |              |
|-----------|--|--------------|
| MICL01886 | Mechanisms of Fungal Pathogenicity   | Walton, J.   |
| MICL08149 | Photoperiodic Control of Gibberellin Metabolism in Long-Day Rosette Plants                 | Zeevaart, J. |
| MICL08169 | Analysis of Senescence-Inducible Ribonuclease in Tomato                                    | Green, P.    |
| MICL08177 | <i>Pseudomonas syringae</i> pv. Tomato Extracellular Proteins Controlled by the Hrp System | He, S.       |
| MICL08178 | Control of mRNA Stability in Dicotyledonous Plants   | Green, P.    |
| MICL08184 | Role of Cell-Wall-Degrading Enzymes in Plant Pathogenesis                                  | Walton, J.   |
| MICL08197 | Photoperiodic Control of Gibberellin Metabolism in Long-Day Rosette Plants                 | Zeevaart, J. |

# Remote Sensing (Center for)

Phone: 353-7195



Richard E. Groop, Director

PROJECTS

MICL01835 Applications of Spatial Information Technologies to Management of Agriculture and Natural Resources Groop, R.



Photo by Bob Neumann

## Resource Development

Phone: 355-3421



Cynthia C. Fridgen, Chair

FACULTY

|                      | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST               |
|----------------------|------|-------------|-------------|-------------|--------------------------------|
| Bingen, R. James     | 13   | 0.40        | 0.00        | 0.60        | International Development      |
| Bronstein, Daniel A. | 12   | 0.40        | 0.00        | 0.60        | Environmental Policy & Law     |
| Dersch, Eckhart      | 12   | 0.25        | 0.50        | 0.25        | Natural Resources Management   |
| Edens, Thomas C.     | 12   | 0.55        | 0.00        | 0.45        | Resource Economics & Policy    |
| Kakela, Peter J.     | 12   | 0.80        | 0.00        | 0.20        | Natural Resources Management   |
| Norris, Patricia E.  | 14   | 0.08        | 0.20        | 0.72        | Land Use                       |
| Rosenbaum, Rene P.   | 14   | 0.40        | 0.00        | 0.60        | Community Economic Development |
| Schultink, Gerhardus | 12   | 0.50        | 0.00        | 0.50        | Natural Resources Management   |
| Witter, Scott G.     | 13   | 0.30        | 0.00        | 0.70        | Natural Resources Management   |
| <b>TOTALS:</b>       |      | <b>3.68</b> | <b>0.70</b> | <b>4.62</b> |                                |

PROJECTS

|           |  |               |
|-----------|--|---------------|
| MICL01536 | Spatial and Temporal Indicators for Economic Development, Land Use Planning and Environmental Impact | Schultink, G. |
| MICL01789 | Land Transformation in the Rural-Urban Interface   | Edens, T.     |
| MICL01817 | Watershed Management in the Rural/Urban Fringe   | Witter, S.    |
| MICL01851 | Water Resource Protection at the Interface of the Hydrologic Cycle and Cultural Influences           | Dersch, E.    |

# Resource Development

(continued)

|           |   |               |
|-----------|---|---------------|
| MICL01859 | Farm, Rural and Environmental Groups in Agricultural Research and Development Policy  | Bingen, R.    |
| MICL01860 | Pesticide Policy Studies  | Bingen, R.    |
| MICL01870 | Use of Impact Assessment in Policy Formulation  | Bronstein, D. |
| MICL03352 | Mineral Lands Development, Energy Requirements and Environmental Impacts              | Kakela, P.    |
| MICL03358 | Economic Issues of Latinos in Rural Settings and Their Impact on Michigan Agriculture | Rosenbaum, R. |

# Sociology

Phone: 355-6632

Christopher K. Vanderpool,  
Chair

## FACULTY

|                     | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST                                   |
|---------------------|------|-------------|-------------|-------------|--|
| Aronoff, Marilyn    | 13   | 0.25        | 0.00        | 0.75        | Rural Communities/Environment                      |
| Bokemeier, Janet L. | 12   | 0.50        | 0.00        | 0.50        | Farm Family/Labor Markets                          |
| Busch, Lawrence M.  | 12   | 0.47        | 0.00        | 0.53        | Agriscience Structure/Agricultural Research Policy |
| Harris, Craig K.    | 13   | 0.50        | 0.00        | 0.50        | Sociology of Agriculture                           |
| Johnson, Nan E.     | 12   | 0.50        | 0.00        | 0.50        | Demography   |
| Rudy, Alan P.       | 14   | 0.30        | 0.00        | 0.70        | Sociology of Agriculture                           |
| <b>TOTALS:</b>      |      | <b>2.52</b> | <b>0.00</b> | <b>3.48</b> |  |

## PROJECTS

|            |  |                    |
|------------|--|--------------------|
| MICL01612  | Strategic Analysis of Technical Change in Commodity Subsectors                                       | Busch, L.          |
| MICL01751* | Rural Labor Markets in the Global Economy  | Bokemeier, J.      |
| MICL01829* | Rural Restructuring: Causes and Consequences of Globalized Agricultural and Natural Resource Systems | Harris, C.         |
| MICL01842* | Commodities, Consumers and Communities: Local Food Systems in a Globalizing Environment              | Busch, L.          |
| MICL01864  | Rural Family Ties and Well-Being: Social Capital, Community Context and Household Strategies         | Bokemeier, J.      |
| MICL01874  | Social Processes in Disability and Death for Nonmetro Americans: A Longitudinal Study                | Johnson, N.        |
| MICL03339  | Rural Migration, Educational Investments and the Uneven Development of Michigan's Upper Peninsula    | Schwarzeweller, H. |
| MICL08206  | Social Reduction of Disability for Nonmetro Elders: A Longitudinal Study                             | Johnson, N.        |

# University Administration

Phone: 355-0123

PROJECTS

MICL00842-ADM General Administration of Federal Grant Research Funds and Publications

Gray, J.

MICL00881-ADM\* Planning and Coordination of Cooperative Regional Research

Gray, J.

## Water Research (Institute of)

Phone: 353-3742



FACULTY

|                  | RANK | MAES        | MSUE        | JOINT       | AREA OF INTEREST        |
|------------------|------|-------------|-------------|-------------|-------------------------|
| D'Itri, Frank M. | 12   | 0.10        | 0.00        | 0.90        | Environmental Recycling |
| <b>TOTALS:</b>   |      | <b>0.10</b> | <b>0.00</b> | <b>0.90</b> |                         |



Jon F. Bartholic, Director

PROJECTS

MICL01838 Development of a Knowledge-Based Decision-Support System for Integrated Landscape/Watershed Planning Bartholic, J.

MICL07626 A Regional Multiagency Partnership for Improving Agriculture and Natural Resources Decisions Bartholic, J.

## Faculty Appointments

|                     | MAES          | MSUE         | JOINT         |
|---------------------|---------------|--------------|---------------|
| <b>GRAND TOTALS</b> | <b>133.41</b> | <b>43.20</b> | <b>134.14</b> |

<sup>1</sup>Elton Smith Endowed Chair

<sup>2</sup>C.S. Mott Distinguished Professor of Sustainable Agriculture

<sup>3</sup>Hannah Professor for Microbial Ecology and Plant Sciences

<sup>4</sup>Nowlin Professor for Water Research (50 percent of the appointment is paid by the endowment)

<sup>5</sup>Clinton Meadows Chair

<sup>6</sup>Partnerships for Ecosystem Research and Management (PERM) positions with salary funded by the Michigan Department of Natural Resources

# Futures Magazine

*Futures* is the quarterly magazine of the Michigan Agricultural Experiment Station (though in 1998, Vol. 15, Nos. 3 and 4, and Vol. 16, Nos. 1 and 2, were combined into one issue). To receive *Futures* free of charge, write to: *Futures* Editor, 310 Agriculture Hall, MSU, East Lansing, MI 48824-1039, call 517-432-1555, or e-mail depolo@msue.msu.edu. *Futures* is also available on the MAES Web site at <http://www.maes.msu.edu>.

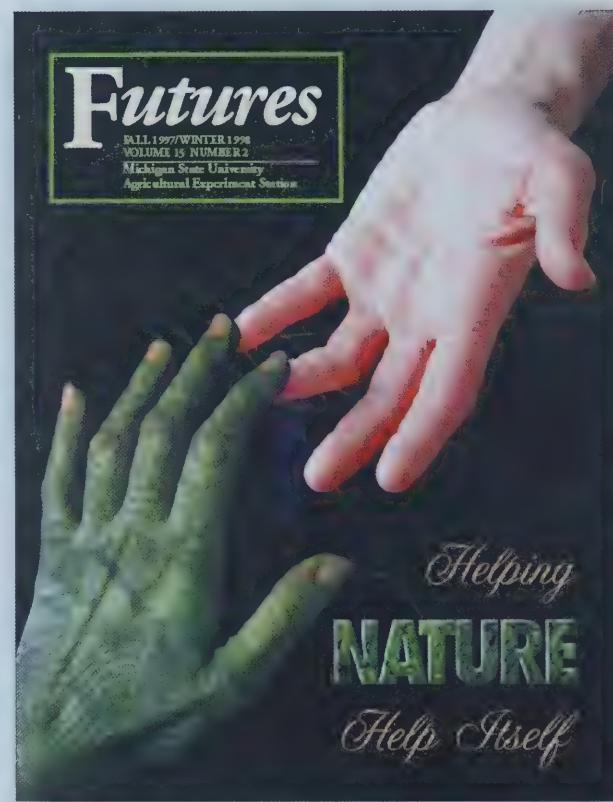
## Fall 1997/Winter 1998 Vol. 15, Nos. 3 and 4

### Helping Nature Help Itself

Much of the research funded by the Michigan Agricultural Experiment Station involves discovering ways to manage the environment and coax it into bringing forth or doing what we'd like it to do. Farmers would like to produce the highest yields possible, and they would like to do this year after year so they can provide inexpensive, healthy food to consumers. Fishing enthusiasts would like to be able to catch a variety of large, lively fish from clean, clear lakes and streams. Homeowners would like to be able to enjoy the beauty of the trees in their backyards without watching them be defoliated by a voracious mass of undulating caterpillars.

In this issue of *Futures*, we highlight several MAES projects that are working to help and restore nature, while at the same time helping people achieve their goals. For example:

- Scientists Doug Landis and Mike Klepinger are working with high school science classes to raise and release beetles to biologically control the spread of purple loosestrife. This colorful, showy plant was a favorite of residents who lived near lakes and ponds, but they soon found out that purple loosestrife was squeezing out native vegetation and wildlife. Because the beetles feed on only purple loosestrife, they may provide an ecologically benign method to curb the plant's takeover. At the same time, researchers Hal Prince and Jim Hancock are investigating whether some plants and animals are adapting their behaviors to the presence of purple loosestrife. Perhaps the story is not completely negative.
- Stuart Gage, an entomologist, and Jeremy Fried, a forestry scientist, are each using geographical information system (GIS) software to help manage ecosystems. Gage has been using GIS to model the spread of gypsy moth caterpillars across the state; Fried has been using the software to help agencies and politicians manage Michigan's forestlands.
- County commissioners and township board members want to help their communities grow economically, but they also want to make sure any expansion doesn't compromise the quality of life for them or for their children. Researchers Eckhart Dersch and Gerhard Schultink are working with local decision makers to educate them about the value of wetlands and helping them evaluate the best options for their areas.
- For decades it was thought that the Great Lakes contained an inexhaustible supply of fish and fresh water. Then, in 1969, the Cuyahoga River caught on fire. Dead fish were washing up on the shore of Lake Erie, and the other lakes were filled with alewives and choked with weeds and pollution. Fisheries sci-



tist Jim Bence is just one of a cadre of researchers from eight states, one Canadian province and several Native American tribal governments who are working to rehabilitate the Great Lakes to meet the needs of people and wildlife.

The work profiled in this issue is just a fraction of the work that is going on across the MAES in this area. As Richard Harwood, holder of the C.S. Mott Chair for Sustainable Agriculture, has said, "It's important for people to know that there is not just one sustainable agriculture 'program' at Michigan State University that includes some projects and excludes others." Expanding that thought, it's fair to say that biological integration and sustainability are threads that weave through almost every MAES project — the subjects are not the purview of one discipline or department.

## Spring/Summer 1998 Vol. 16, Nos. 1 and 2

### Social and Behavioral Science Research: Focusing on the Human Dimension

The Michigan Agricultural Experiment Station funds researchers in five colleges, including the College of Social Science, but the word "agricultural" makes many people think that much of the work revolves around increasing crop production or developing new livestock breeding techniques.

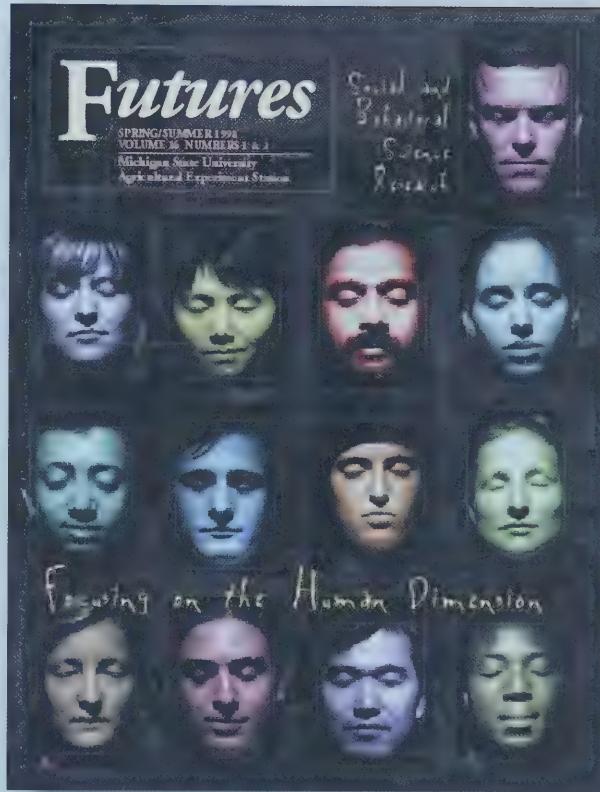
Rural families and communities and economic development have always been part of the MAES mission, but because research in these areas may take longer to show results, they tended to be overshadowed by dramatic production increases. Consider the time it takes to strengthen the economy of a rural area vs. producing a record alfalfa yield. It's not a question of one being more important than the other; it's just that production-oriented/enhancing research is easier to understand and the results have an immediate impact. With social and behavioral science research, the results take longer to surface and are more difficult to analyze.

For the past several years, bringing more attention to social and behavioral science research has been a focus of the MAES. Following a pattern of success established by coalitions created around Michigan's plant and animal industries, the MAES, MSU Extension (MSUE), the Office of the Provost and the Institute for Children, Youth and Families created the Coalition for Children, Youth, Families and Communities (CYFC) to give communities access to research results quickly and easily.

"For the past several years at MSU, we've seen a growing awareness of outreach scholarship in these areas," said Jan Bokemeier, assistant director of the MAES, sociology researcher and Coalition for CYFC co-director. "The need to strengthen the ties between research and extension started conversations and set the stage for this joint effort. With the involvement of the Institute for Children, Youth and Families and the encouragement of the provost, we committed to a university effort to accomplish these goals."

The Coalition for CYFC's other two co-directors are Marguerite Barratt, director of the Institute for Children, Youth and Families, and Cheri Booth, MSUE associate director.

The CYFC Coalition was created to stimulate, facilitate and coordinate MSU research and outreach efforts related to the health and well-being of children, youth and families; to support and develop the capacity of Michigan communities to meet their own needs; and to encourage new directions in scholarship and new applications for problem solving.



This issue of *Futures* highlights just a portion of the work in these areas, including much collaborative work on social capital, understanding Latino issues in the state, community nutrition, population migration and public involvement in research agendas.

Former Michigan Agricultural College President Kenyon Butterfield said in 1917, "In our investigations we still stress too much the goal of increased productivity as our great task. We still have too much faith in knowledge of the physical and biological facts and principles as all sufficing. There should be searching of heart as to our policies and programs. Are they adequate to the needs of the new epoch?"

The same question could be asked today and still be pertinent. Research in the social and behavioral sciences is helping to answer this and other questions at the intersection of science and society.

## MAES Contributors

July 1, 1997 to June 30, 1998

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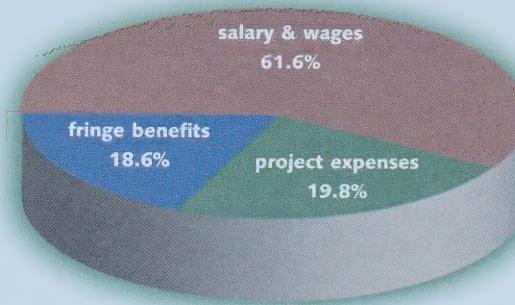
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# Financial Report

July 1, 1997 to June 30, 1998

## DISTRIBUTION OF APPROPRIATED FUNDS



### INCOME:

Federal Appropriations ..... \$4,849,619

Hatch \$ 3,678,353

McIntire-Stennis \$ 191,351

Hatch RRF \$ 912,627

Hatch Animal and Disease, Section 1433 \$ 67,288

State Appropriations ..... \$29,681,275

**TOTAL APPROPRIATIONS:** ..... \$34,530,894

Grants — Federal, State and Private ..... \$29,183,295

**\$63,714,189**

### EXPENSES:

**\$63,714,189**

Salaries \$21,283,509

Fringe Benefits \$ 6,417,155

Project Expenses \$ 6,830,230

Grants — Federal, State and Private\* \$29,183,295

# Personnel

(Full-time Equivalents Funded From Appropriated Funds)

### Research Staff\*\* 151.73

|                                     |       |
|-------------------------------------|-------|
| Professors                          | 75.45 |
| Associate Professors                | 30.45 |
| Assistant Professors                | 22.58 |
| Research Associates and Specialists | 23.25 |

### Support Staff 156.36

|                              |       |
|------------------------------|-------|
| Administrative Professionals | 74.08 |
| Supervisors                  | 24.32 |
| Clerical                     | 46.51 |
| Technicians                  | 11.45 |

\* Grants are reported using most recent five-year average

\*\* Does not include department chairpersons/unit administrators



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**MICHIGAN AGRICULTURAL EXPERIMENT STATION**

**J. Ian Gray, Director**

109 Agriculture Hall

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East Lansing, Michigan 48824-1039



**SR-102, March 1999**

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